JANUARY 8, 1955

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MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING •

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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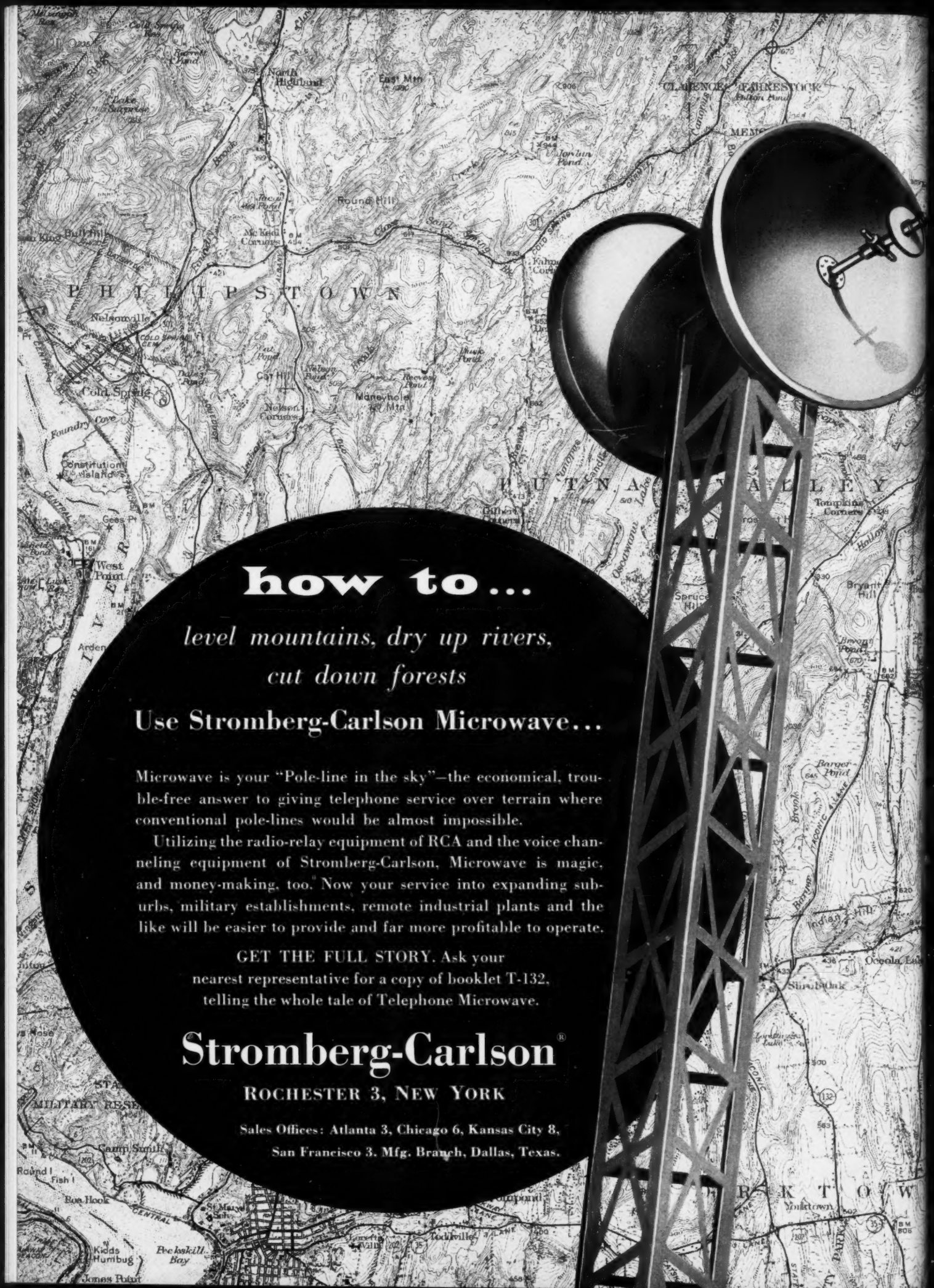
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Microwave is your "Pole-line in the sky"—the economical, trouble-free answer to giving telephone service over terrain where conventional pole-lines would be almost impossible.
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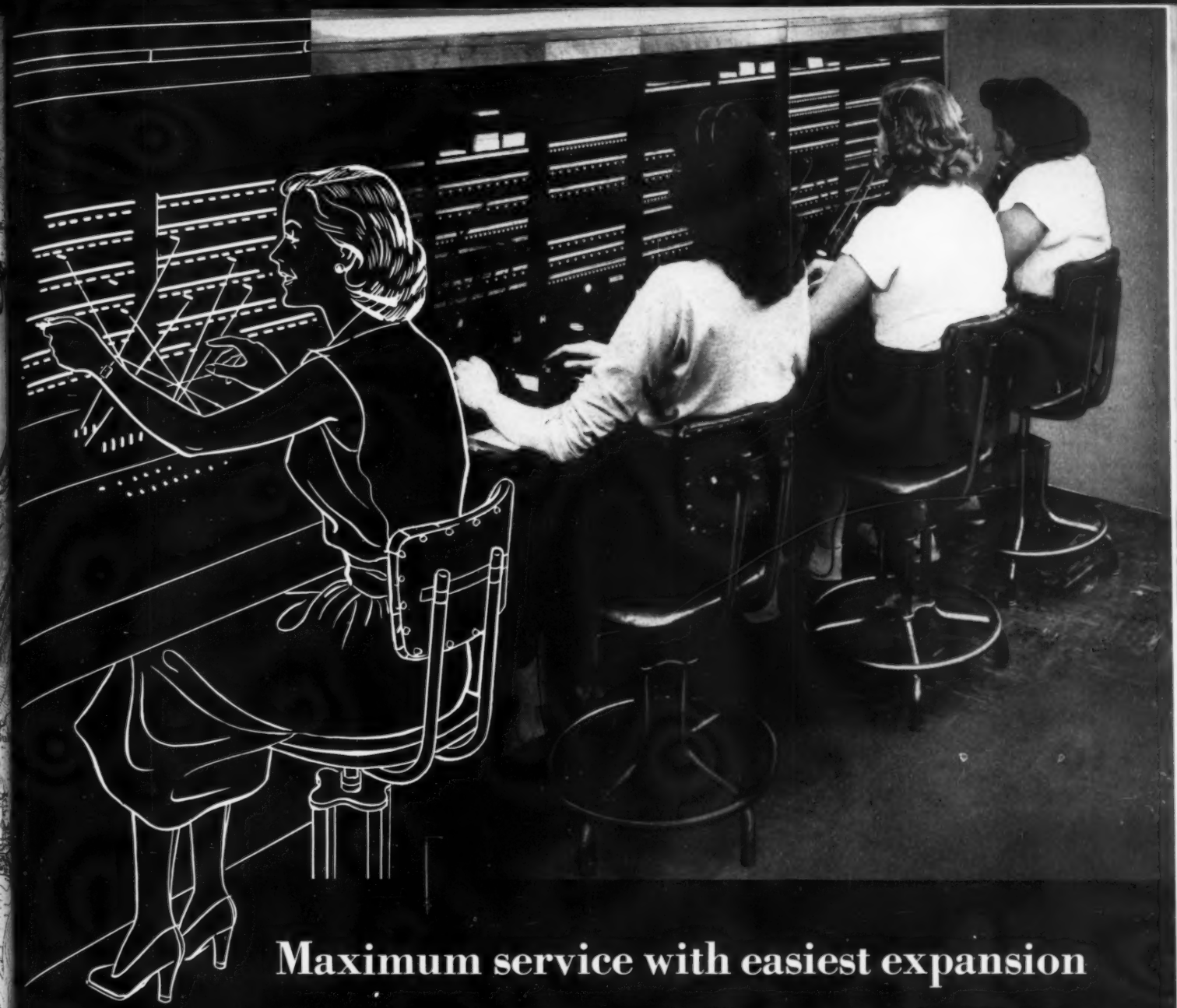

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THAT'S just one of the ingenious advantages of a Stromberg-Carlson No. 3 type Toll Board. Produced in a standard model of ONE position (with optional annex), it allows the operating company *to buy only a single position* and to make *minimum* additions whenever traffic warrants.

Add such features as Removable Jack Sleeves . . . Operator Toll Dialing . . . Keysender Operation . . . then you'll understand why progressive independents from Maine to California have investigated the field and chosen Stromberg-Carlson.

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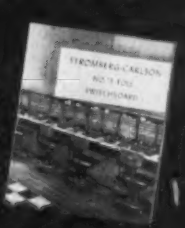
Booklet T-113 tells all about these boards and is yours for the asking. Drop a line today.



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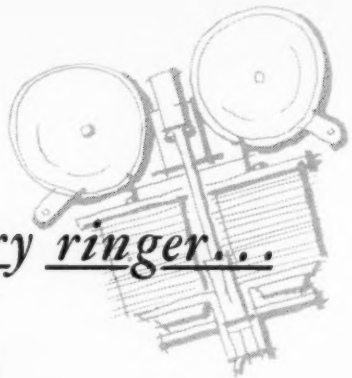
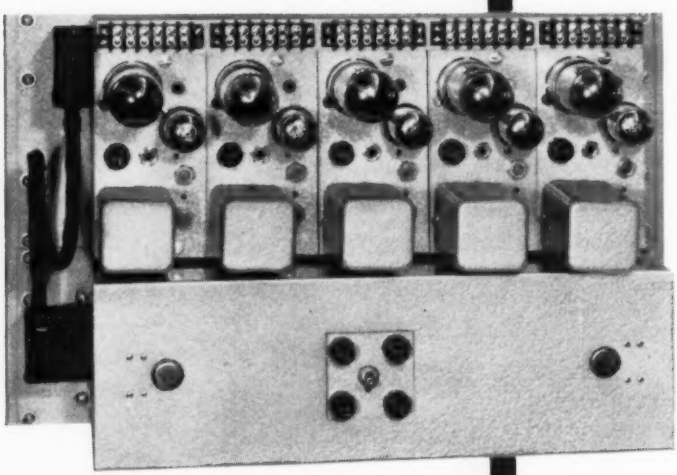


Behind every ringer . . .

there must be a dependable ringing supply



Here's what users have to say about the "dependability" of the KELLOGG *Electronic Ringing Generator*

"From the first day that we placed the Kellogg Electronic Ringing Generator in service we have seen our trouble due to ringing power disappear . . ."

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"Routine maintenance has been reduced to practically zero . . ."

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"This generator is handling the ringing requirements for 6,000 subscribers, and we are convinced that it is overworked at times. However there is no visible indication to that effect."

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"Their compactness, ease of installation, minimum mounting space and reliability of operation give them preferred rating by all of our equipment personnel."

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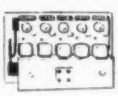
Why the Kellogg Electronic Ringing Generator Gives Continuous, Trouble-Free Performance in Installation After Installation:

- **No moving parts, — no contacts to adjust.**
- **Excellent frequency stability with respect to room temperature, humidity, ringing load, input power and voltage variations.**
- **Maximum ringing power with lower power consumption.**
- **Sound straight forward circuits . . . minimum number of components operating well below rated capacities,**

AND MANY OTHER FEATURES THAT MEAN SUPERIOR RINGING SERVICE.

Get All the Facts on the Kellogg Electronic Ringing Generator . . . right away!



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79 West Monroe St., Chicago 3, Illinois

Send me complete information on the Kellogg Electronic Ringing Generator.

Name_____ Position_____

Company_____

Address_____

City_____ Zone____ State_____

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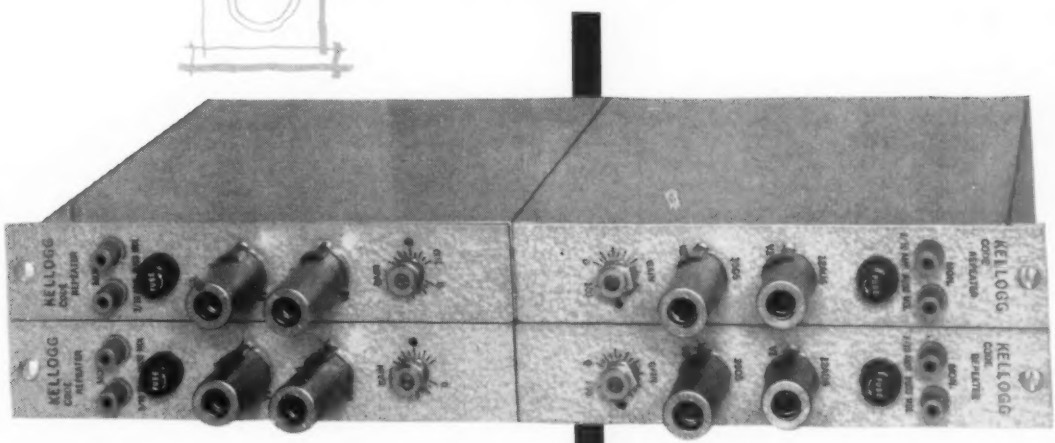
Stop excessive line loss ...at a down-to-earth cost



Front view of four Z-11 Repeaters. Four units require only 3½" vertical mounting space on a 19" equipment rack. May be mounted vertically or horizontally. There are various type mountings available for all types of racks. Send for details.

Kellogg Z-11 Voice Frequency Repeater

IMPORTANT ADVANTAGES:

- **REDUCES TRANSMISSION LOSSES** in typical circuits up to one-half with a maximum net gain of about 10 db, whichever is less.
- **NO SPECIAL BY-PASSES:** Maintains continuity of circuit, signalling, and direct current path.
- **NO SPECIAL POWER SUPPLY:** Operates from 48 volt exchange battery. No extra batteries or power unit required.
- **UNIVERSAL APPLICATION:** Effective on trunks or subscriber loops, dial or ringdown, loaded or non-loaded cable or open wire.
- **COMPACT:** Two repeaters require 1¾" mounting space on 19" rack. Sixteen repeaters occupy 8¾" on a 26" rack. Eighteen repeaters take 8¾" on a 33" rack.

The new Kellogg Z-11 Voice Frequency Repeater is the most practical and economical way for you to improve transmission in your existing circuits or get the best possible transmission from new facilities. A negative impedance repeater of the series type, the Z-11 has a surprisingly low initial cost. It also has a low operating cost. This two-way savings makes it an economical addition to existing facilities and by planning for its use in new construction, smaller sized cable can be used with no sacrifice in transmission efficiency.

Get Detailed Information of the Kellogg Z-11 Voice Frequency Repeater

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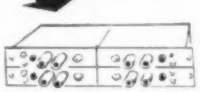
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Please send complete information on the Kellogg Z-11 Voice Frequency Repeater.

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Company_____

Address_____

City_____ Zone____ State_____

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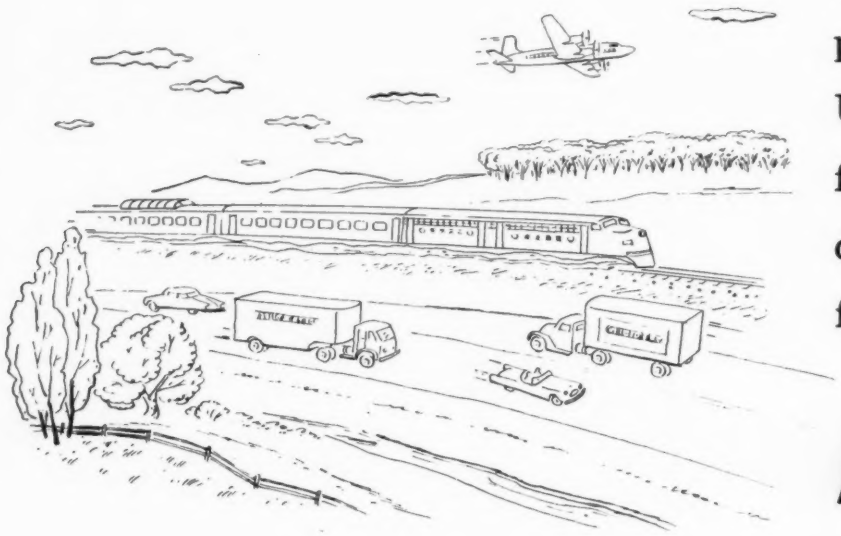
Your Nearest Kellogg Shipping Point is Never Far Away!



• Kellogg's six conveniently located warehouses and more than 100 supplier distribution points throughout the United States assure you the fastest, and most economical delivery of guaranteed, factory-tested line supplies.

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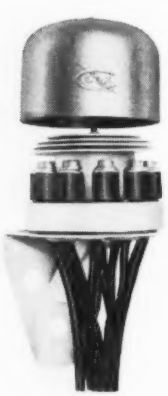
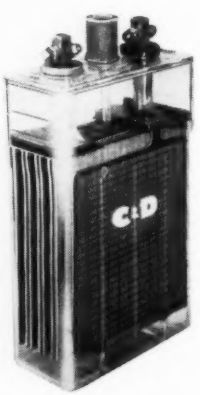
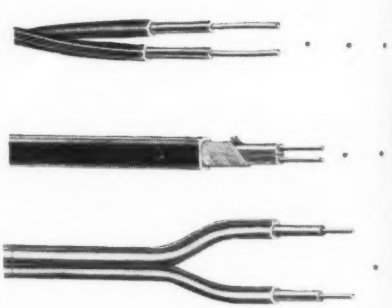


5-Circuit Power Cross Protector provides a single assembly for 5 circuits to be mounted on a 10-pin arm requiring only a single ground wire. Easy to install—use only 3 mounting screws. Made by COOK ELECTRIC COMPANY.



Extra-life Telephone Battery—PlastiCal (lead calcium grids) have expected life of 25 years in full-float service. Plasti-Cell (high tensile special alloy grids) have a life expectancy of 14 years. Made by C&D BATTERIES, INC.



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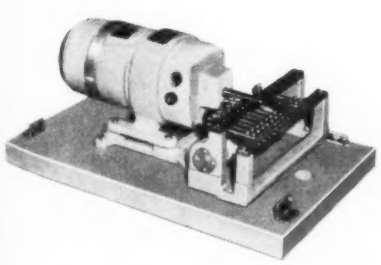
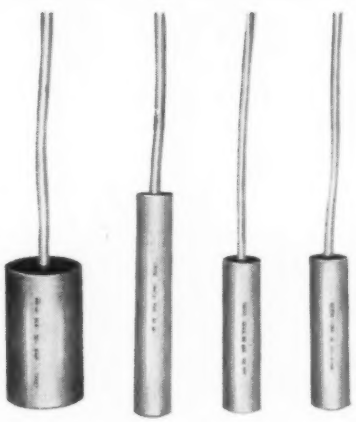
Simple and Effective! The quick, easy positive way to dry splices in lead covered cable is to sprinkle Drierite Dessicant granules in among the conductors. This W. A. HAMMOND DRIERITE COMPANY product will not harm the sheath, conductors or insulation.

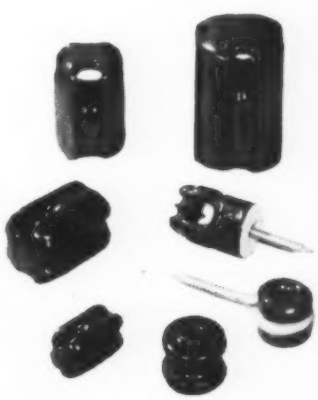
for Line Supplies



Ultimate in Maintenance-Free Rotary Equipment—The Tone Alternator Interrupter Unit produces clear, unchanging tones of 500 cycles and 600/120 cycles for dial and busy tones. Made by HOLTZER-CABOT TELEPHONE EQUIPMENT DIVISION, National Pneumatic Co., Inc.



Application of Loading Coils on telephone circuits, reduces unit loss to ⅛ or ¼ the non-loaded value—coils are designed for use on 2-wire telephone circuits in non-quadded paper insulated or plastic cable. COMMUNICATION EQUIPMENT & ENGINEERING CO.



Uniform High Quality is the distinctive characteristic of all PORCELAIN PRODUCTS, INC., insulators and wire holders . . . all produced to exacting specifications and made to guarantee top quality in insulation and top performance for telephone installation.

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FLASHES AND PLUGS

FISH PHONETICS. Next time you approach the fish bowl don't expect any conversation, but nevertheless, communication is just as important to a fish as it is to a man. We have this on the eminent authority of none other than Dr. C. M. Breder, of the department of fishes and aquatic biology, American Museum of Natural History, who recently advanced this (to us) startling information in *Research Reviews*, publication of the United States Office of Naval Research in Washington.

Not all fish have voices, Dr. Breder explains, but male croaker fish are among those that do. In the breeding season, they join in great choruses as do frogs. A female croaker is voiceless, however; she can listen to her suitor but cannot talk back.

Although fish do not have external ears, they can hear. Outer ears are not necessary in the water, because the greater density of the water in contact with the head of the fish carries sound to the inner ear. In fact, fish have organs of hearing completely lacking in land animals. These are a series of pores, or canals, just under the skin. Dr. Breder suggests that this system, known to scientists as the "lateral line," is used by the fish as a sort of "sonar," or "microecho-ranging," to keep the fish from colliding with each other or obstacles as they dart about under very crowded conditions.

Fish that swim along together in perfect formation in schools use vision to keep the group in line, Dr. Breder indicates. Although they can maintain schools on pretty dark nights, they break up in absolute darkness, or when the fish are blinded, experiments have shown.

There is no leader for a fish school, Dr. Breder reveals. In fact, it sometime happens that the first fish in a school is turned by some influence so that it catches sight of the trailing members of the same school. Then they follow around in a circular path and continue to go around and around in a manner that is silly even to the fish until something happens to break up the "mill."

Fish also have taste buds as do men, and even a sense of touch, Dr. Breder reports.

• • •

LIVE AND LEARN. City fathers in Omaha had a recorded cry of a starling in distress placed in the municipal stadium with the idea it would rid the place of sparrows. It didn't.

However, it did:

Frighten the animals in the city zoo.

Arouse the fears of—and give the jitters to—the caged feathered pets of many citizens.

Bring a flood of angry telephone calls from said citizens.

• • •

GIRL'S BEST FRIEND. A 10-year-old girl, lost in downtown Austin, Tex., while visiting her grandmother, lost no time in tearful bewilderment. Going directly to a store telephone, she put through a long distance call to her parents in Kansas City, listened carefully to instructions, and proceeded to board the right bus to grandmother's house.

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Contents

A NEW CONCEPT IN OPEN WIRE PLANT 17
By Warner T. Smith

IN THE NATION'S CAPITAL 21
By Francis X. Welch

THE OPERATOR'S CORNER 24
By Mayme Workman

EXHIBITS SHOW HOW TO MAKE TELEPHONE JOBS SAFE 28

THE PLANT MAN'S NOTEBOOK 30
By Ray Blain

PLANT MAN'S QUIZ 32
By Ray Bla...

COURTS AND COMMISSIONS 34

H. D. FARGO Jr., *President & Advertising Manager*
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Trouble Free

(A CASE HISTORY)*

A southern telephone company is well pleased with the way Ankoseal came through an ordeal of lightning and bullets. There was plenty of lightning during the summer of 1953. Many direct strikes, but in no case were the Ankoseal cable lines damaged. The only repair job was removing eight shotgun pellets from the jacket of a cable which was done "quickly and easily".

Let Ankoseal cut down "trouble" by specifying it now.

*Letter on file at Ansonia

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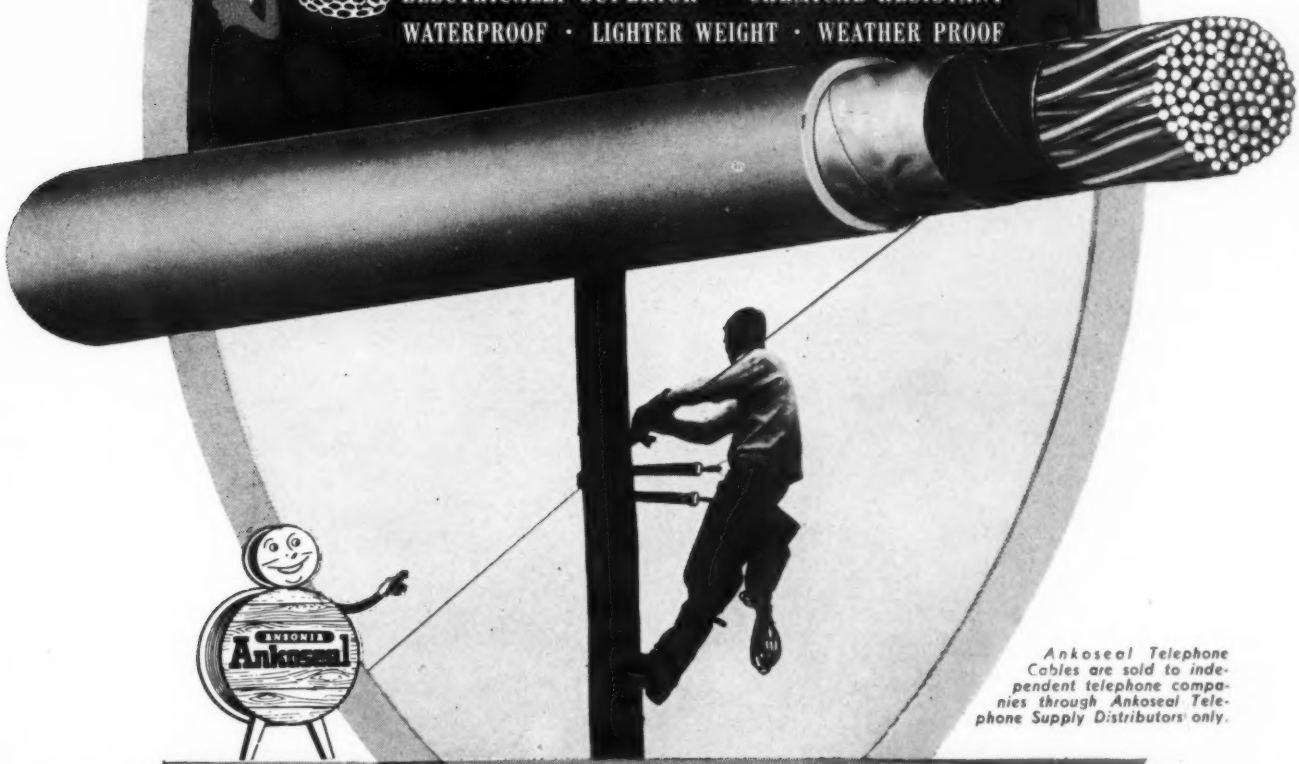

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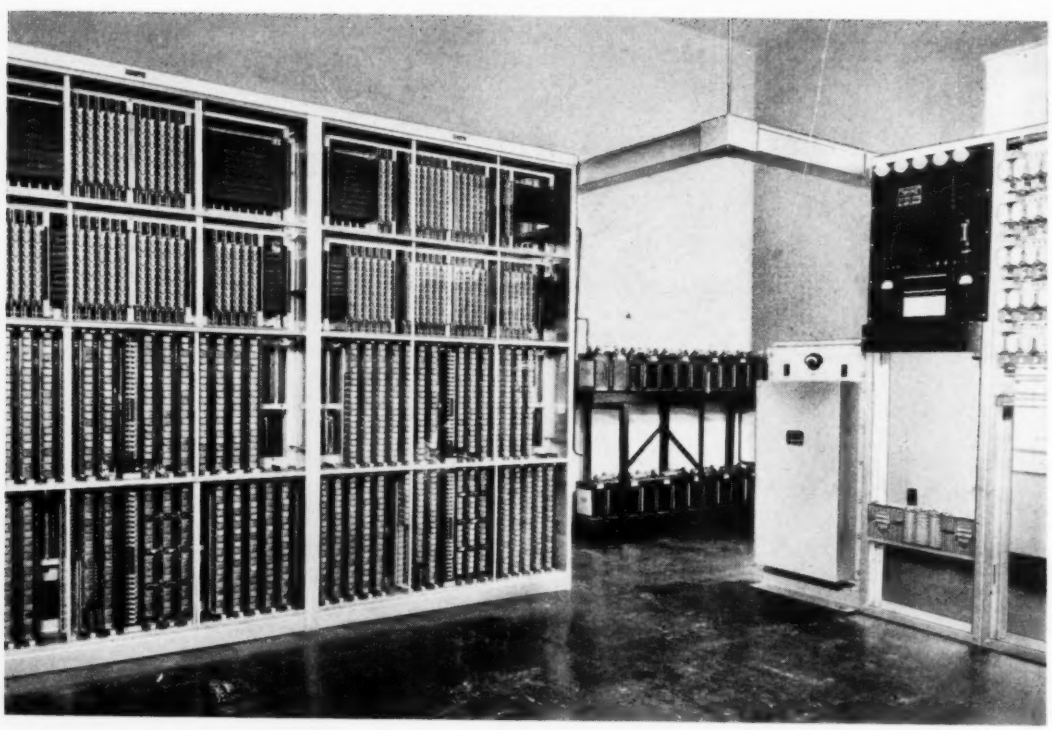
You can add additional lines LEICH DIAL



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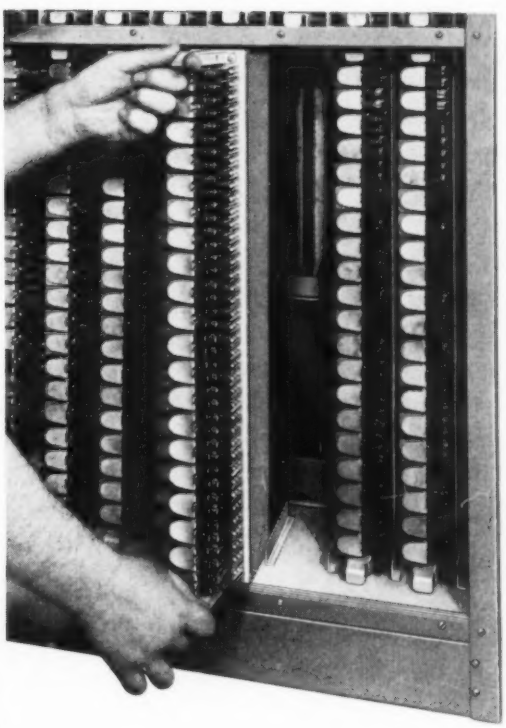
If you have enough links, but need ten additional lines, you can add them to your Leich Dial System for only $175.00. All the line and cut-off relays needed for ten additional lines come in a relay bar as shown above. THIS IS YOUR ONLY EXPENSE!

There's no installation cost. Each bay of your Leich Dial System is wired for its capacity of 100 lines and 15 links. Your own man merely jacks in this $175.00 relay bar and you have ten new lines.

Adding links to your Leich Dial System is economical too. No factory installers are necessary. All the parts come in corrugated shipping containers, are jacked-in on the switchboard by your own people. There's no wiring, no soldering. Your only expense is for the equipment you add.

The time and money you save in making additions is only one of many practical features of the Leich Dial System. Hundreds and hundreds of exchanges are now using Leich Dial Systems to give modern dial service with a minimum of trouble and expense. Write today for our new Dial System catalog. No charge or obligation. Address Leich Sales Corporation, 427 W. Randolph, Chicago 6, Illinois.



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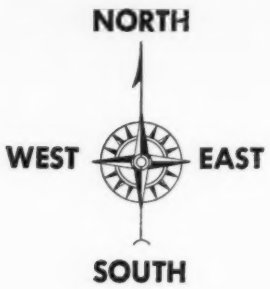

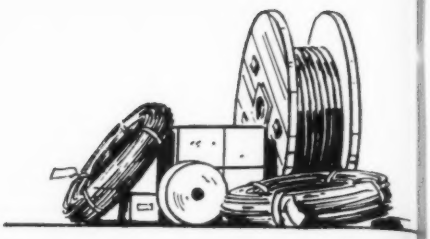

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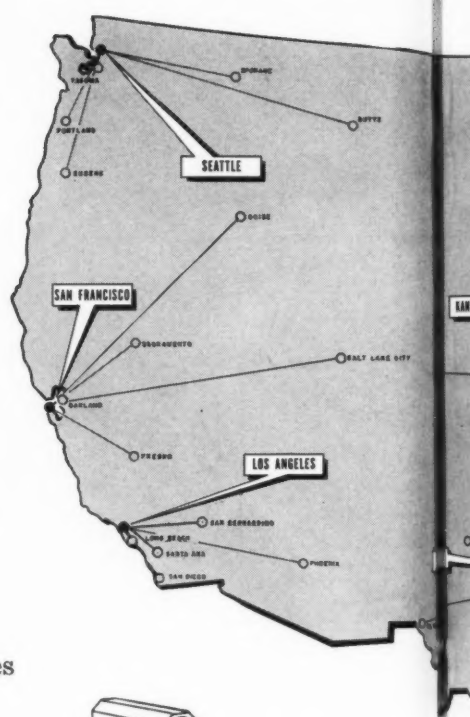
To Independent Telephone Companies

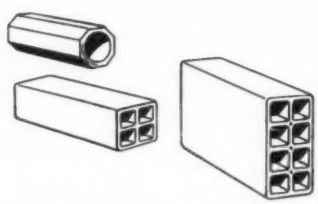


From its earliest beginnings, the telephone industry and Graybar have grown up together. And, with every advance in telephony, Graybar has extended its facilities and services in a tradition that still remains unchallenged.

Furnishing the thriving independent telephone industry with supplies and equipment for efficient, profitable operation is the job of your local Graybar Representative. His intimate knowledge of *your* requirements, backed up by Graybar's close contact with the nation's leading suppliers, simplifies your purchasing problems and assures "on time" deliveries.

And remember, complete catalog and specification data is always available on any of the hundreds of items you need – from fuses to switchboards . . . poles to insulator pins . . . tools to terminals. We'll welcome your call for information.

For service, for speed – you'll find it pays to make all your orders read . . . "via Graybar."



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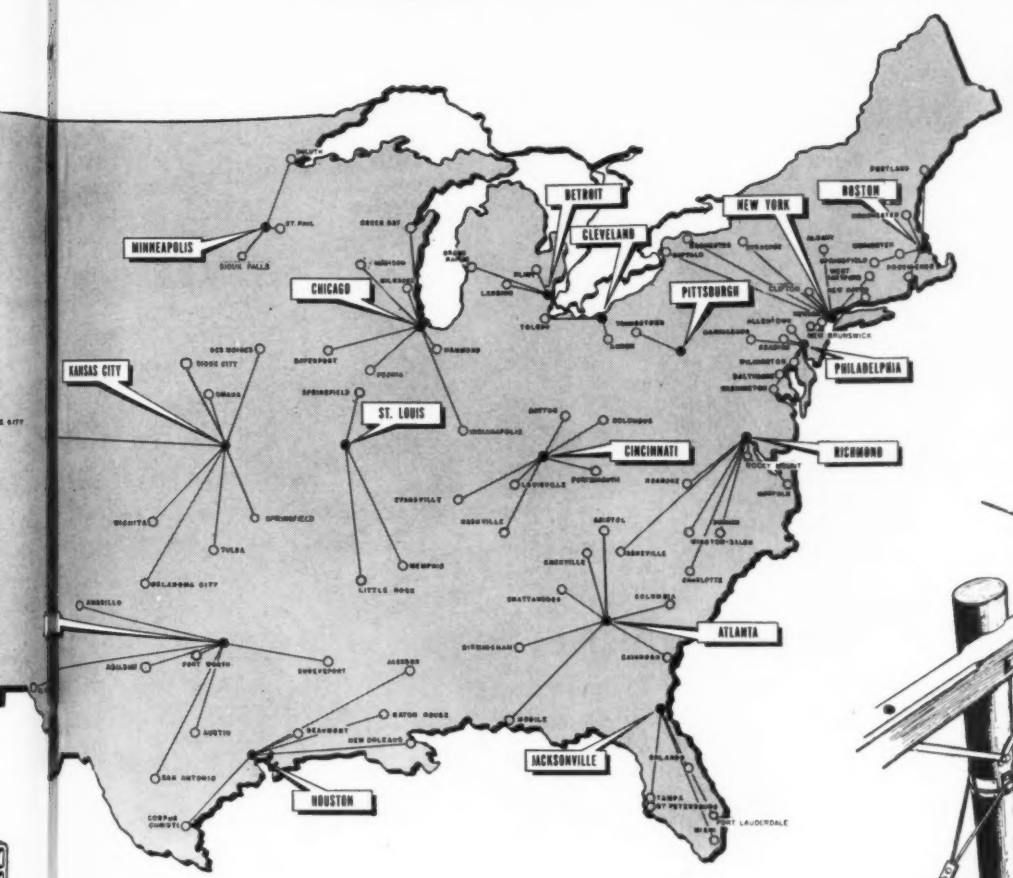

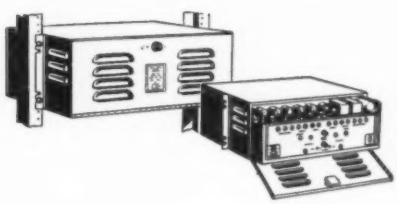

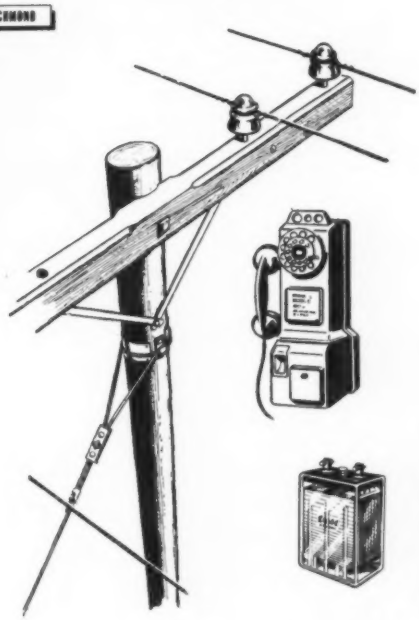

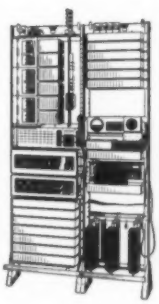

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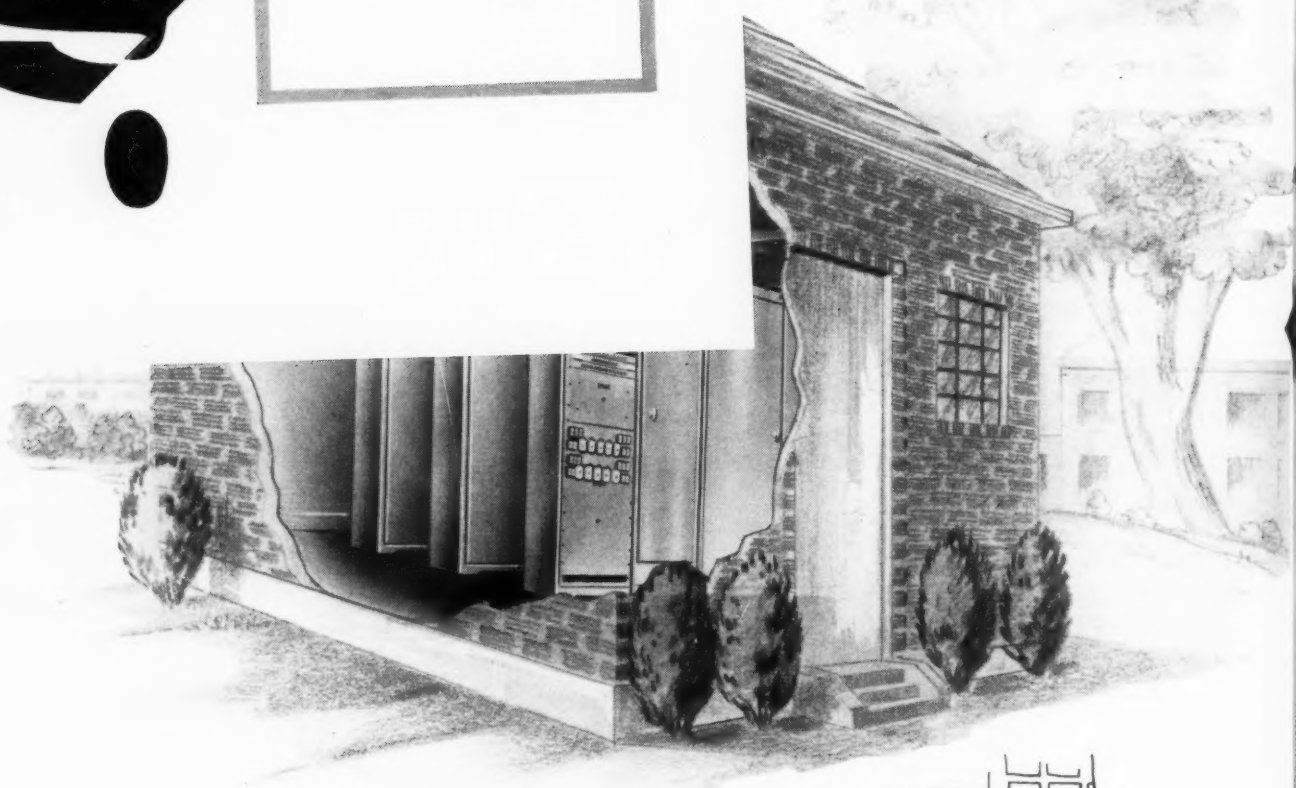

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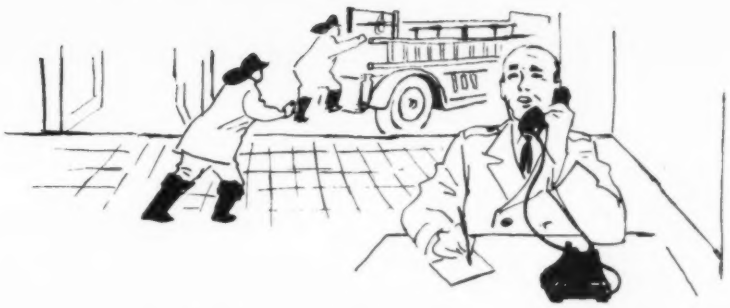

The SILENT HOUSE WITH MANY VOICES

Though seldom a word is spoken within its walls, it carries more conversations than any building in town. The butcher, the baker, the defense goods maker, the fire department and order taker, all would find normal living impossible without the speed and distance lent to their voices by the silent servant in residence here.

YOU recognize this description of an automatic telephone exchange. However, unless you have seen North "All Relay" automatic systems in use, analyzed their low overhead cost and high ratio of subscriber satisfaction, you can't fully appreciate this story. We'd like to take you behind these fancy words with some hard facts; show you how much North wholly unattended switchboards can mean to your community, your management peace of mind and your company profits. We would like to prove that for silent, minimum-supervision telephone switching you cannot beat . . .

NORTH *All-Relay*

AUTOMATIC EXCHANGES

THE NORTH ELECTRIC MANUFACTURING COMPANY

601 South Market Street • Galion, Ohio

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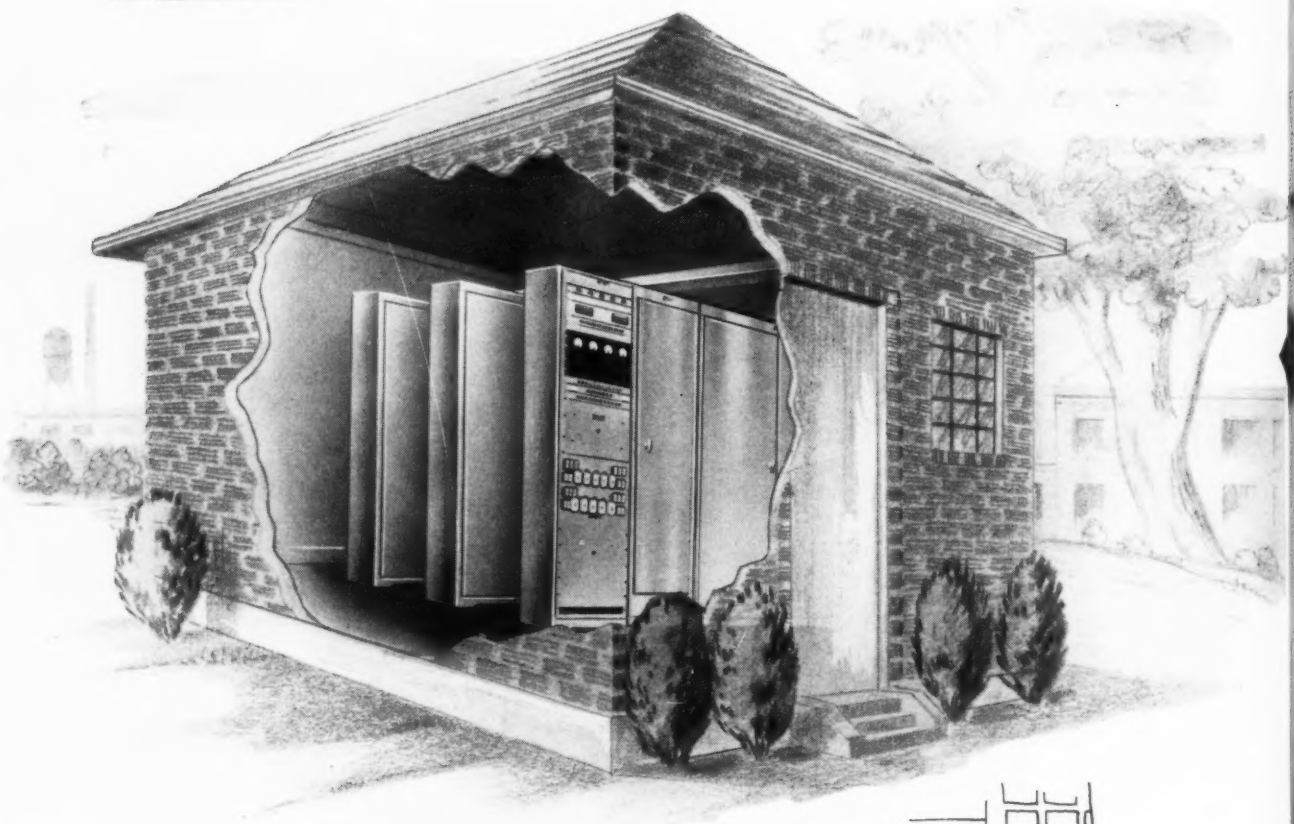

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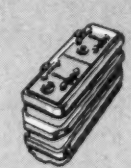
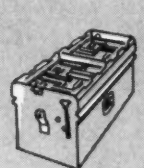
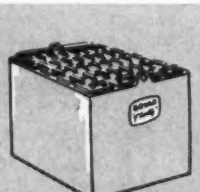


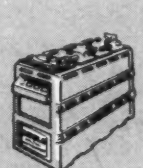
For Railroad Air Conditioning and Lighting



For Mine Shuttle Cars and Locomotives



For Electric Industrial Trucks



For Diesel Locomotive Starting

For Standby and Emergency Power

A New Concept In Open Wire Plant

By Warner T. Smith*

SUMMARY. A design concept is discussed which appears to promise reduction of construction and maintenance costs and improved operating characteristics on rural systems. The main feature of the design is the use of insulation on open wire conductors. This will permit major changes in other aspects of the pole line design which collectively could result in substantial advantages. The proposed design appears adaptable to construction from the ground by techniques similar to those recently developed by the Bell System.

Background

Rural open wire plant built in recent years differs little in appearance from that built 40 years ago. Poles are now placed further apart, and each circuit requires two high-strength wires rather than one with moderate strength; but other than these, the changes have been minor. Progress in improvement of cable plant, on the other hand, has been far more dynamic. Lashed cable suspension, strand mounted terminals, pulp insulation, plastic sheathed cable, and plastic sheathed-plastic insulated cables are among the many advances in exchange cable construction.

At this time when there is so much emphasis on extension of telephone service into rural areas, it is critically important to study operation and maintenance characteristics in open wire plant for possible economies.

Changes in central office equipment from magneto to automatic have placed far greater requirements on open wire plant. The leakage to ground is much more critical with automatic systems than with magneto. The spread of rural electrification has placed additional requirements on design and maintenance of open wire plant in order to avoid noise from unbalances to ground. Improvement in transmission standards throughout the telephone industry has added further to the necessity for higher standards of maintenance.

In areas where there is a requirement for five to 10 circuits with very little expected growth, open wire is still the most attractive type of plant from service and cost standpoints. Therefore, open wire will remain as the primary type of rural plant in the forseeable future, and there is, accordingly, a challenge to improve open wire plant from the standpoint of initial and annual costs without lowering the quality of service.

Recently, the Bell System has made trial installations of an underarm type of wire suspension of novel design which can be constructed without the necessity for climbing poles except at drops and deadends.[1] This method promises to reduce construction costs. It is too early to determine what basic advantages in maintenance or operating characteristics this construction offers over conventional open wire plant.

Present Design

Present-day open wire exchange plant for rural areas utilizes 12-inch horizontal spacing on cross-arms at non-transposed points and, generally, something less than 12-inch spacing at transposed points. The tandem transposition brackets in wide use at present provide about 2½-inch horizontal wire spacing at support points. These brackets are used on a given pair at every other pole in long-span construction (R-1 System) and every fourth pole in short-span construction (R-2 System). Separation of wires in bracket construction is a variable, depending on the diameter of the poles, configuration, etc.

The horizontal spacings utilized are based on many factors, such as transmission requirements, structural considerations, and the necessity for minimizing the possibility of the two wires of a circuit swinging into contact with each other in the spans.

The spacing between the wires of a circuit affects transmission in two ways. The attenuation of the circuit decreases slightly as spacing is increased from about eight inches. For minimum attenuation, large spacings could be used. However, the larger the spacing, the more susceptible the circuit becomes to cross-talk and noise induction. Therefore, there is an upper limit to the spacing used because of transmission considerations. Greater spacing would increase the length of cross-arms required and this longer lever arm would, in turn, require an increase in the dimensions of the cross-arms for support.

In automatic systems, momentary contacts between wires in the span can cause transmission difficulties, mis-dialing and excessive wear on central office equipment. The frequency of contacts is dependent on the span length, sag and sag equality of the wires, separation, and wind conditions. The longer the span, with given sag and spacing, the more critical sag equality becomes in limiting the number of contacts for a given wind velocity; the greater the spacing, the less the number of contacts; the greater the sag in the wires the greater the frequency of hits, and for any configuration, the

*Mr. Smith is assistant chief of the Telephone Engineering Division of the Rural Electrification Administration.

[1] A New Type Open-Wire for Rural Areas, *Bell Laboratories Record*—April, 1954, by R. G. Watling.

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hits will be most frequent in areas with high winds.[2]

Since spacing is pretty well fixed at present in long-span construction, the wire sag is the critical variable in determining hits. It is necessary in long-span construction to minimize sags by high wire tensions which contributes to conductor fatigue. Likewise, it is necessary to maintain equality of sag of the wires. The sag increases whenever a severe storm load is imposed on the wires because of the permanent stretch characteristics of wires. This sag increase is seldom equal for all wires and resagging is required to avoid swinging contacts and in some cases to maintain required ground clearances.

The movement of anchors, twisting of poles, warping of cross-arms, and tie slippages all contribute to sag changes and inequalities and often require maintenance work to avoid frequent contacts of wires within the spans.

The use of tandem brackets decreases the average spacing of the wires in spans on both sides of the brackets and thereby increases the probability of swinging contacts and the necessity to maintain minimum sags and rigorous sag equality to avoid frequent hits.

Another characteristic of open wire plant that affects maintenance is the matter of leakage to ground. Cross-talk and noise induction considerations require that the two wires of a circuit be well balanced to ground. The primary insulation to ground is provided by glass insulators at each point of support. These insulators are provided with skirts to approximate dry leakage paths under wet weather conditions. If a single insulator on one side of the line becomes cracked or broken, an unbalance to ground can exist under wet weather conditions and create unsatisfactory noise or cross-talk conditions until repaired.

There are about 400 insulators in 10 miles of single circuit open wire so the probability of insulator trouble is high. Similarly, tree contacts with wires of the circuit, contact by spanish moss, etc., can result in unsatisfactory operation requiring more frequent tree trimming and other maintenance. With tandem brackets, there is a less effective single skirt between wires of a pair and in corrosive atmospheres, with battery on the line at all times as with automatic systems, severe electrolytic corrosion may occur.

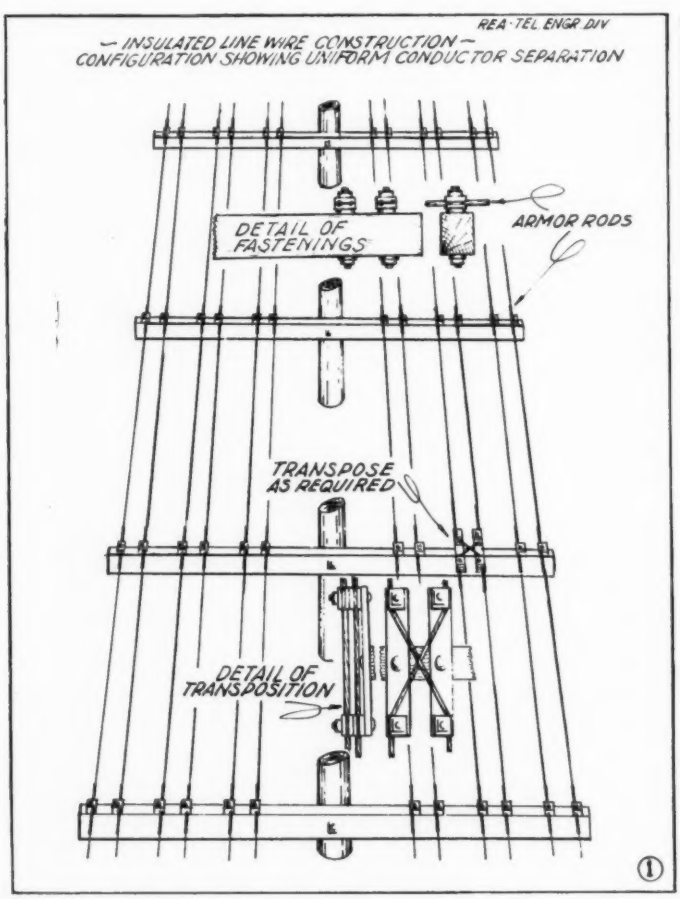
Poles in place represent over 50 per cent of the cost of a mile of single-circuit open wire line. Therefore, the use of long spans to reduce the number of poles required in a mile of line is desirable. Decreasing span lengths would increase the number of insulators per mile and increase maintenance requirements for this item of plant. It is manifestly desirable to use long-span construction with open wire, and this premise is accepted in the proposed new design.

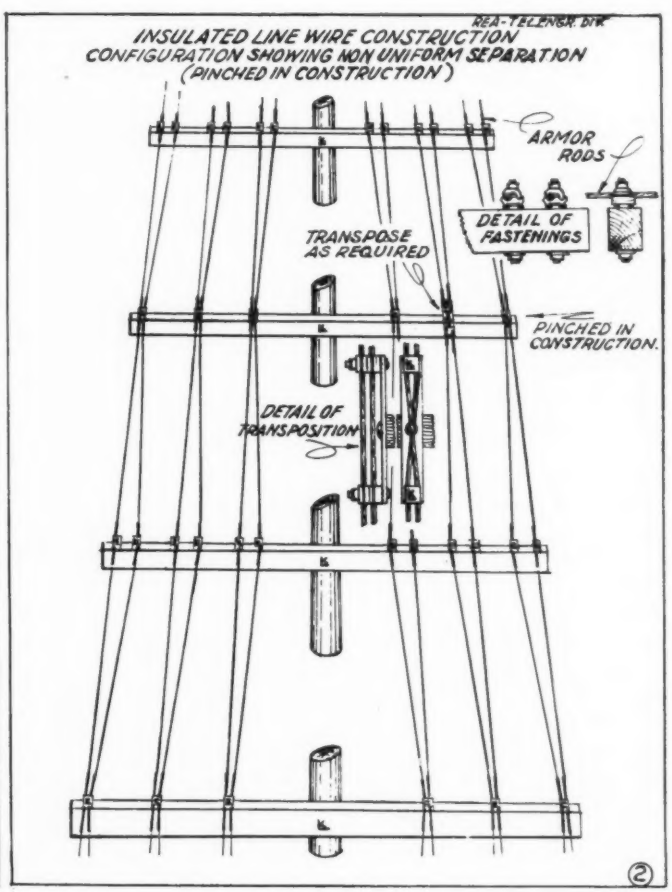
Proposed New Design

In long-span construction and in windy areas, mid-span hits present an operating problem of prime importance. If open wire plant could be designed so that hits (a) did not occur, or (b) if they did occur, would cause no effect on the circuit, a real improvement would be achieved. Numerous devices have been suggested to prevent hits from occurring but none, as yet, have been acceptable for widespread use.

How can hits occur without bothering the circuit? One answer is by having one wire of the pair insulated throughout its length. The insulation would prevent electrical contact and the circuit would be undisturbed. Insulation materials now available make it feasible to apply thin wall insulation over line conductors with long life expectancy at reasonable cost. This is done at present in the case of the .109

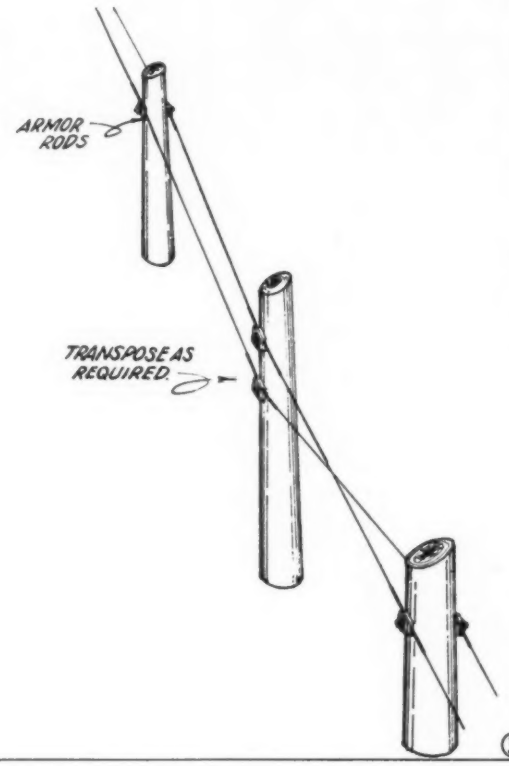
[2]Motion of Telephone Wires in Wind, *Bell System Technical Journal*—April, 1930, by D. A. Quarles.





INSULATED LINE WIRE CONSTRUCTION
SINGLE CIRCUIT LEAD
(ONE BOLT CLAMP FOR POLE ATTACHMENT.)

REA-TEL. ENGR. DIV.



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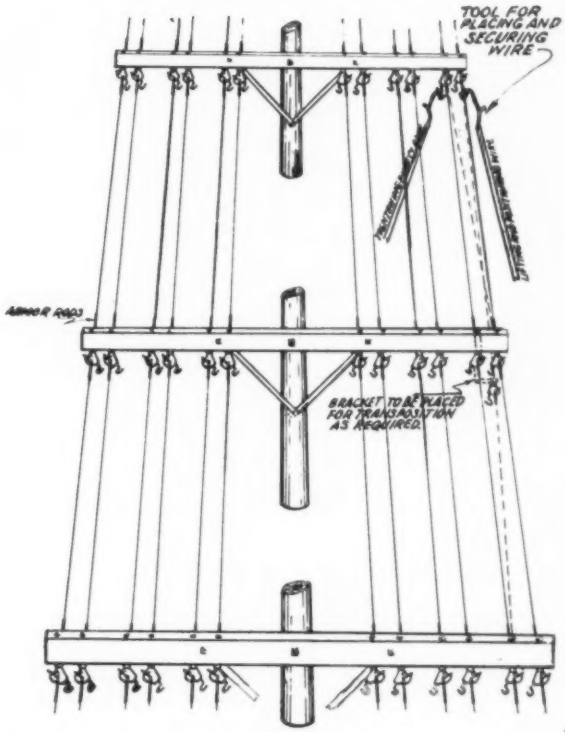
INSULATED LINE WIRE CONSTRUCTION
PERSPECTIVE OF POSSIBLE
SIX CIRCUIT CONFIGURATION

REA-TEL ENGR. DIV.



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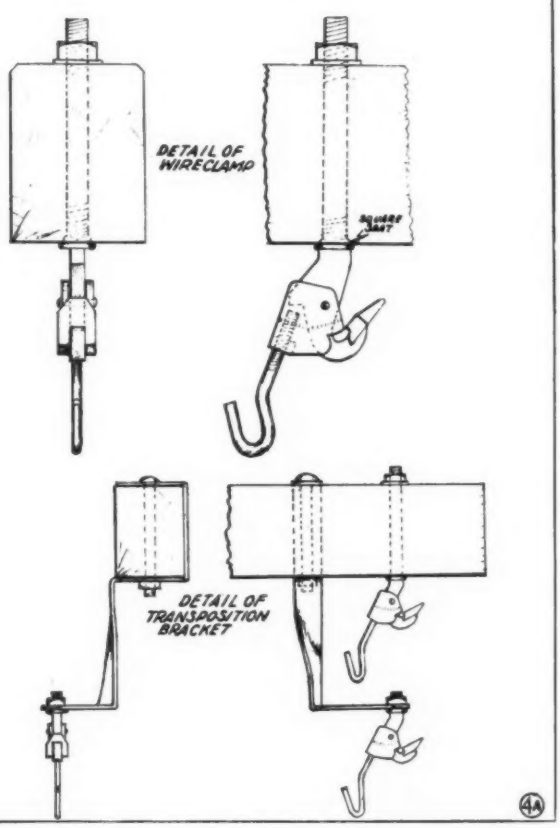
INSULATED LINE WIRE CONSTRUCTION

REA-TEL ENGR DIV.



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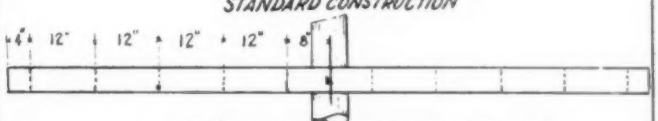
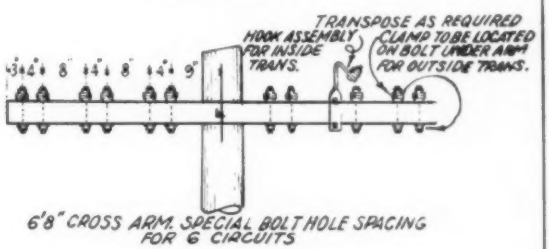
INSULATED LINE WIRE CONSTRUCTION
COMPARATIVE CROSS ARM REQUIREMENTS

REA-TEL ENGR DIV.

STANDARD CONSTRUCTION

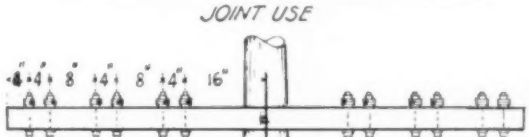


10 PIN (10') CROSS ARM. STANDARD PIN SPACING
FOR 5 CIRCUITS



6'8" CROSS ARM. SPECIAL BOLT HOLE SPACING
FOR 6 CIRCUITS

JOINT USE



8' CROSS ARM. SPECIAL BOLT HOLE SPACING
FOR 6 CIRCUITS

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inch steel line wire used as the messenger for the new six-pair rural distribution cable.

Insulating one wire of a pair would eliminate the hit problem for a single circuit of any spacing, but for multi-circuit leads, greater spacing between pairs or other provision would be needed to minimize hits between the bare wires of the horizontally adjacent pairs which occur as a result of transpositions. The bare wires could start out non-adjacent but would be adjacent at times because of transpositions. The spacing between the wires of a pair could be reduced so that additional spacing between pairs could be provided without the necessity to increase cross-arm lengths.

Decreased spacing of the wires of a pair would decrease the susceptibility of the circuit to induced noise and, therefore, would enable transposition intervals to be lengthened substantially where only a single pair is involved. On multi-circuit leads, the number of transpositions necessary for cross-talk purposes could be reduced by reduced spacing of a pair and increased spacing between pairs on the same cross-arms. The attenuation of a pair would be increased slightly by the decreased spacing, but this would not be serious since transmission on open wire portions of plant is seldom controlling.

The insulation of one wire of a circuit creates a problem at support points. It is necessary to remove the insulation at support points so that the insulated wire does not have different leakage to ground from the uninsulated wire. The cost of insulating the conductor may be somewhat offset by possible reductions in cross-arm lengths and savings in number and type of transposition brackets. There should be substantial advantages in reduced maintenance requirements connected with resagging to avoid hits.

The potential advantages of insulating one wire of a pair suggests further advantages in insulating both wires.

If both wires could be insulated and the insulation maintained at support points there would be no need for other insulation at these points. All advantages, already mentioned, obtained in insulating one wire and important additional ones would be obtained with full-wire insulation. Means are presently available, utilizing armor rods, to support polyethylene or polyvinyl chloride insulated wire without deterioration of the insulation. Since support insulation would not be required, pins and insulators would not be needed. All that would be required, is an unexpensive mechanism to clamp the armor rods to the cross-arms or poles. The insulation material used on the conductors would result in very little change in leakage between dry and wet weather conditions, which means that transmission can be based on attenuation values approaching dry weather conditions.

Likewise, leakage to ground limits for automatic equipment would be more easily met. This would be particularly important for circuits on which subscriber carrier may be used, since wet weather attenuation at carrier frequencies for conventional circuits is substantially higher than dry weather values. Likewise, attenuation changes with ice accumulation would be far less with insulated conductors since the ice will not come into direct contact with the wire. Also, the insulating material possibly could be designed to have characteristics unfavorable to ice accumulation.

R-1 transposition systems using tandem type brackets result in an average separation between wires of a pair of approximately 7 inches. Present transmission over such circuits is satisfactory, so 7-inch spacings could be used satisfactorily but even smaller spacing would be desirable. It is believed that 3 or 4-inch spacing may be about the optimum, considering structural and electrical factors. This means that cross-arms could be shortened to something approaching one-half of present lengths for the same number of circuits without using pole pairs and maintaining spacing between pairs about twice that between wires of a pair.

Transposition intervals could be lengthened, particularly on single circuit leads and made without expensive brackets, as insulators at supports would not be required.

Tip or ring side identification could be provided by a ridge in the insulation of one wire of the pair or by other means, if desired.

Present types of line conductors could be used so no change in splice fittings would be needed. Drops can be connected in the normal manner by removing insulation a few inches away from support points and taping the connection with plastic tapes. Taping may be needed to avoid increasing leakage in wet weather.

The insulation over the line wire would protect the conductor from the corrosive effects of the atmosphere and add substantially to the life expectancy of line conductors. Likewise, it would preserve the conductivity at carrier frequencies of plated steel conductors.

The insulating material used could be polyethylene or polyvinyl chloride which are presently used for cable sheaths and wire insulation and have been well proven as to performance under conditions encountered in the field. Other materials may be developed having superior characteristics for this application. The .109 inch steel messenger wire used for rural distribution cable is covered with about 22 mil thickness of polyethylene. This is probably a thicker coating than required for electrical considerations for the proposed application, but may be needed for abrasion resistance. The cost of the materials used is not excessive and if the material were extruded on the line wires at the wire mills a favorable cost picture could result.

Armor rods used for support would need to be of proper length and inside diameter so that loading is distributed over sufficient length to prevent cold-flow of the insulating material, and to develop adequate longitudinal holding power. The fittings to hold the armor rods around the insulated conductor need only be a slot with bolt-operated flange in order to develop sufficient compressive loading to hold the armor rods, since the armor rods provide the needed protection against abrasion. By using an eye-bolt and hook similar to that described in Reference 1, ("A New Type Open-wire for Rural Areas," *Bell Laboratories Record*—April, 1954, by R. G. Watling) the line could be built without climbing the poles.

The accompanying drawings illustrate some possible configurations using insulated wires.

A summary of the possible advantages of using insulated wires for open wire plant are:

(1) No pins or insulators would be required, and the initial and maintenance costs of these items are eliminated.

(2) Length of cross-arms could be reduced by nearly one-half with possibly less stringent material requirements.

(3) Better electrical characteristics as to noise induction.

(4) Little change in leakage between dry and wet weather conditions, so that automatic operation is more reliable.

(5) Tree foliage, spanish moss, etc., would not affect leakage, and tree clearing and retrimming requirements could be reduced.

(6) Transposition intervals may be lengthened and simpler transposition brackets used.

(7) Long spans would be used without mid-span hit difficulties.

(8) More sag could be used without hit difficulties, reducing tensions and thereby conductor fatigue.

(9) Sag equalization would not be critical and resagging requirements as a result of storm loads could be reduced substantially.

(10) Utilizing 4-inch spacing for each pair with 8 or 12 inches or more

(Please turn to page 44)

by FRANCIS X. WELCH WASHINGTON EDITOR

REA's Nelsen makes statement on meeting with telephone industry advisory committee. Iron Curtain countries control radio programs for public. CIO lawyer condemns labor monopoly curbs. Idaho Supreme Court reverses commission in Mountain States Telephone & Telegraph Co. rate case.

JUST AS the old year closed, REA Administrator Nelsen made public a statement about an important meeting held in Washington on Dec. 15. This was the meeting of REA's telephone industry advisory group in which both telephone company and cooperative operating organizations are represented. Its purpose is to improve REA's rural telephone loan program.

The meeting, at which 18 representatives of various segments of the telephone industry met with the top REA telephone officials, agreed on a number of things. But the principal point of agreement was that thousands of small Independent telephone companies and associations, now operating systems in rural areas, ought to be encouraged to examine the REA program, and to consider the use of REA loans and other services wherever such help is needed to bring more and better service to the farmer.

The advisory committee was also anxious that REA use its well-publicized position as a federal agency to bring to the attention of farmers, and those interested in bringing telephone service to them, changes in REA loan policies which now give REA a chance to "tailor" loans to fit the special needs of individual borrowers. The text of the advisory group's statement of recommendation to REA gave special notice to six points: (1) Financing; (2) partial system financing; (3) cooperation needed to speed up the program; (4) bidding; (5) equities; and (6) extended area service.

The advisory group's statement did not specifically urge that every telephone company or cooperative needing money for plant improvements should borrow from REA. It merely asked that they "encourage and assist" the extension of more and better service to the farmer and that they at least "consider" REA financing where needed. This is a significant qualification. It implies that, in a great many cases, REA financing will *not* be needed to carry out the desirable rural service improvements. In other words, it is recognized that telephone companies and others may be able to finance their own needs, either through the attraction of additional capital investment or the use of their credit with banks or other private investment sources.

The advisory group urged that REA stay on the job and continue its policy of obtaining and guiding the necessary cooperation between would-be borrowers, contractors, and suppliers, manufacturers, state regulatory commissions, and connecting telephone companies—all to the end that more and better service be made available to the farmers. As to bidding, it was felt that REA's policy on competitive bidding for plant construction by its borrowers is not generally understood. Exceptions are permitted in some situations. And the advisory group believes that more notice and attention should be given to these special situations and to the clarification of these REA bidding policies in general.

The same was urged with respect to REA's equity requirements. This is the amount which REA insists the borrower must put up from its own funds or property ownership. This is of special importance for telephone company borrowers since they must pledge such equities as security for REA loans. It was urged that the bases for such equity requirements should be clarified and publicized by REA.

The advisory group stated that extended area service is still quite a problem not only to REA loan applicants but to connecting telephone companies in some instances. It was urged that such parties ought to get together on a cooperative plan for programming and engineering proper equipment. The negotiation of reasonable and fair extended area service settlements was also recommended, using as a guide "the report of the Extended Area Service Committee which was adopted by the USITA (United States Independent Telephone Association) board of directors."

There are a number of other things which the REA advisory group considered, including engineering standards, cutting construction costs, speeding up loan procedure, getting proper plans for loan programs approved by state regulatory bodies. These specific recommendations of the advisory group were turned over to the REA telephone staff for study and action where practicable. Commenting on these recommendations, Administrator Nelsen said:

"We know there are still problems in the telephone loan program, even though we are just completing REA's most successful calendar year. The difficulties touched on by the advisory group at their meeting and in their statement are the very ones which are of most concern to REA. We are gratified at this understanding of our trouble spots by these telephone men who have outstanding reputations in the industry. With their interest and the support of the organizations they represent, REA will be better able to meet the need of rural telephone systems for long-term financing in order to put more telephones on the farms of America."

As of the end of the year, Dec. 31, 1954, Nelsen estimated that there would be about 65 million dollars in gross telephone loans which is about 15 million dollars more than this time a year ago. He noted with some concern, however, the leveling off of loan applications and loan approvals. REA still has funds available which were appropriated by the last Congress, in an amount even greater than requested by the President's budget. The same

XUM

thing could happen when the 84th Congress gets to work on the Eisenhower budget next month. Publicity and approved loan procedure are, therefore, two instruments which REA will have to stress in order to make loans which will be constructive and safe for the taxpayers' dollars and, yet, be numerous enough to carry out the liberal appropriation authority made available by Congress.

"Wired Radio"—Iron Curtain Style

News comes from behind the Iron Curtain of a telephone business opportunity which is not likely to prove very popular in this country. In fact, most freedom loving American telephone companies, in common with freedom loving Americans generally, would probably say they wanted no part of it—without any hesitation whatever. Here is the interesting and insidious radio set-up which is developing in Poland, Czechoslovakia, Bulgaria, Romania, and Hungary.

Suppose that you could only get one station on your radio. Suppose that one station was devoted to programs officially selected by the central government. Suppose you heard only the news the government wanted you to hear, in a manner the government wanted you to hear it. Suppose that any effort on your part to get any other kind of a program was punishable by heavy fines and penalties.

Such a set-up would bring you closer to the kind of world described in George Orwell's novel, "1984." But this sort of thing is happening in the communist countries. And it is happening because of *government-owned telephone systems of those countries,* which are being used as closed wire circuits to prevent the people there from tuning in anything else beside the "official radio."

The device used is a little horror called "wired radio," soon to be supplemented by "wired television." It is not actually radio at all, in the sense of being a device by which the receiving set owner may select from the air any sounds that happen to be roaming

REA ALLOCATES $1,940,000 IN THREE LOANS

The Rural Electrification Administration approved loans for improving and extending telephone service in rural areas of Minnesota, Georgia and North Dakota, the U. S. Department of Agriculture announced on Dec. 28. Details of the three loans which amounted to $1,940,000 follow:

Carlos Telephone Co., Alexandria, Minn., on Dec. 21 was allocated $37,000, second loan to this borrower.

These loan funds will be used to provide facilities to serve 81 subscribers in Douglas County not included in the first loan of $36,000 which was approved in December, 1950. The company proposes to acquire the facilities of the Eagle Telephone Co., Holmes City, which is adjacent to the present system, and now is providing magneto service to 58 subscribers.

A new central office building will be constructed at Holmes City, 10 miles of line rebuilt and 18 miles of new line added. With these changes, the borrower will be able to offer improved service to the existing subscribers and to serve 23 rural families now without telephones.

H. James Boyd is manager of the Carlos Telephone Co.

* * *

Coastal Utilities, Inc., Hinesville, Ga., on Dec. 22, received an allocation of $404,000 to improve and extend rural telephone service in Liberty County.

The company now provides automatic and common battery service to 541 subscribers. With the REA loan funds, the borrower proposes to convert the present system completely to automatic operation and add facilities to serve 288 subscribers now without telephones.

About 60 miles of new line will be constructed and 18 miles of existing line will be rebuilt. The company will improve and expand its central office at Midway, and will install new automatic facilities in the Hinesville office.

The completed system will consist of 136 miles of line to serve 829 subscribers. This will include 30 paystations served by a common battery switchboard, at nearby Camp Stewart. Toll ticketing and operator assistance service will be provided by Coastal Utilities from its Hinesville central office.

Glenn E. Bryant is president and manager of Coastal Utilities, Inc.

* * *

BEK Telephone Mutual Aid Corp., Steele, N. D., on Dec. 23 secured an allocation of $1,499,000, second loan to this borrower.

The borrower will use these funds to furnish modern telephone service to 1,764 additional subscribers in an expanded operating area. The BEK cooperative plans the following acquisitions as a basis for the enlarged system:

The Pettibone Mutual Telephone Co., the Tuttle Telephone Exchange, the Sibley Rural Telephone Co., the Moffit Telephone Co., the Morton Telephone Co., the Wing Telephone Co., the Wing Rural Telephone Co., the Manning Independent Telephone Co., the Tri-Township Telephone Co., the Robinson Telephone Co., and facilities serving the Dawson area from the Northwestern Bell Telephone Co. In addition, the borrower will acquire the right to serve 11 subscribers of the Naughton Farmers Telephone Co., located in the Menoken area.

The acquired facilities are now serving 278 subscribers, including 149 switchers, over 235 miles of line. In addition, the current loan funds will cover increased construction and labor costs since the first loan was approved in October, 1953.

The cooperative plans to construct 1,331 miles of new line and rebuild 184 miles of the existing line. New automatic central offices will be constructed at Robinson, Tuttle, Wing, Dawson, Pettibone, Moffit and at a central point between McKenzie and Menoken. The new construction and improvements will make it possible for the borrower to offer improved service to the existing subscribers and to serve 1,486 subscribers now without telephones.

With the two REA loans, totaling $1,870,000, the BEK cooperative will be able to serve 2,293 subscribers and provide switching service to five rural establishments owning their lines, in Burleigh, Emmons, Kidder, Logan and Sheridan counties.

In addition to the seven exchanges listed above, the borrower will have central offices at Hazelton and Kintyre. The system, when complete, will consist of 1911 miles of line and nine automatic exchanges.

George L. Jackson is president of the BEK cooperative.

there. Actually, it is canned stuff, piped in by telephone wire. The satellite governments have been moving ahead with wired radio for some time. The total number of such sets in Poland, Czechoslovakia, Bulgaria, Romania and Hungary is now estimated at 2 million, with some millions more planned.

True, radios are still manufactured. The Iron Curtain dictators are trying to be subtle and gradual. They are trying to get their sucker populations "conditioned" by habit, to accept the exclusive spoon-fed government monopoly radio fare.

The theory is that the people will gradually shift, for economic reasons, to buy "wired radio" on a voluntary basis. Open circuit radio sets are being deliberately limited to high-priced receivers. Wired radio is cheap. Also, the satellite governments are seeing to it that replacement parts for standard radios are hard to get.

The Communists' purpose is not obscure. First, the purpose is to feed as many people as possible only such pap as the Communist governments think they ought to be fed. Second, the purpose is to stop, to as great a degree as possible, clandestine listening to Western broadcasts.

CIO Lawyer Hits Labor Monopoly Curbs

One of the long-time controversial questions in the government's effort to regulate labor unions is that of monopoly. The Supreme Court has decided that the anti-trust laws do not apply to labor unions in the ordinary sense, even though labor union operations may result in restraints of trade, lessening of competition, and other economic developments which would be forbidden by law if they were brought about by the operations of a business enterprise.

As a result, there have been repeated attempts in Congress to bring the unions under the anti-trust laws where undesirable monopolistic results can be shown. So far Congress has been cold to such proposals and the chances are pretty good that Congress will do no more about it in the year of 1955.

Arthur J. Goldberg, CIO general counsel, told a law conference held in connection with the CIO convention in Los Angeles (early in December) that applying anti-trust laws to labor unions was designed to destroy or weaken them. The conference was attended by both employer and union attorneys, law school professors, and labor arbitrators.

Mr. Goldberg said an advisory committee named by Attorney General Brownell is studying possible revision of the anti-trust laws, including a proposal to remove a present labor union exemption. Mr. Goldberg said previous unsuccessful legislation seeking to apply anti-trust laws to unions has not been aimed at barring unions and employers from cooperating to the public's disadvantage. He said the proposals have always sought primarily to "destroy or limit the economic power of unions to deal with management."

One of the results of labor union exemption from anti-trust laws is the possibility that unions can resist the introduction or acceptance of new automatic or labor-saving devices which might be regarded as conducive to technological unemployment. True, none of our large unions are presently fighting any particular automatic device on that ground. But the Los Angeles convention of CIO did approve a resolution asking Congress to investigate the "present and prospective impact of technological developments on our economy."

The resolution said that automatic machines and new production techniques are displacing workers at a rapid rate. "The facts allow no room for the illusion that expansion of employment in the manufacture of the revolutionary machines will compensate to any substantial degree for contraction of employment in industries using them," the resolution stated.

The experience of automatic conversion in the telephone industry has generally been to the contrary. More people are working for telephone companies today than ever before, despite the steady march of automatic improvement. There have been shifts of one type of employment to another—more technicians where there might be fewer operators. But the over-all balance has been a steady gain in telephone industry employment over the years.

The workers fought against the first industrial revolution back in the 18th century, even smashing looms and other machinery that threatened to replace them. But last month, in his report to the CIO convention, President Walter P. Reuther made it clear that his organization will not resist automation. He wisely said that in the long run "workers need not be displaced by technological improvements if markets grow and job opportunities increase as the economy expands."

Automation will undoubtedly bring hardship to some workers through job changes and readjustment. But the net gains for labor, and for the nation as a whole, can be beneficial beyond all past performances of this age of the machine, if labor shares adequately in the benefits of automation's increased productivity.

In a recent speech on automation before the Congress of American Industry, John Diebold, leading authority on the subject, pointed out how industry can "alleviate the rough spots" for labor in the changes that are coming. He reports that increased requirements of firms installing automatic equipment have thus far absorbed those whose jobs have been taken by machines, and that "there is no reason to expect this process to cease."

Idaho Commission Reversed

The separations manual approved by the National Association of Railroad & Utility Commissioners (NARUC) and the FCC for allocating telephone plant, expenses, and revenue between interstate and intrastate commerce has been given an indirect pat on the back by the Idaho Supreme Court. This came in the form of a reversal of the Idaho Public Utilities Commission's denial of a request by Mountain States Telephone & Telegraph Co. for a $1,097,000 a year increase.

The Idaho commission had rejected the company's use of the separations manual figures and used a formula of its own in order to arrive at a lower value for that part of the company's system devoted to Idaho service. On this basis, the commission justified its refusal to grant the company any rate increase and found that the return being earned under the old rates was fair enough.

The court said that the Idaho commission did not necessarily have to use the separations manual just because it is "apparently sanctioned and used by the Federal Communications Commission and other states." The court's opinion, by Justice Raymond L. Givens, commented on the need of cooperation" between federal and state regulatory agencies on the matter. As to the commission's home-made formula, however, the court found that the intrastate percentage, derived from allocating three-fourths of the system to Idaho on the basis of peak interstate tolls in August, 1952, "but applied to the base value of the property . . . cannot be approved and as it is the sole basis of all separations, must be reversed."

This obviously means that the commission will have to use the FCC-NARUC separations formula. Just how much of the million plus increase asked by the company this will yield remains to be worked out by the commission.

The Idaho court corrected several other errors of the state commission in denying the company's increase. The most interesting was the court's refu-

(Please turn to page 45)

XUM

The OPERATOR'S CORNER

by MAYME WORKMAN, Traffic Editor

JENNY LIND was described as a plain, undistinguished girl, but when she rose to sing, her appearance was transfigured. The whole fire and dignity of her genius kindled a glory about her face. She surrendered her whole soul to her task, and the absorbed and mastered spirit shone. Similarly, it is said that those who listened to Daniel Webster's great oration on the Pilgrim Fathers remarked that the stateman's face made them think of a transparent bronze statue, brilliantly lighted from within, with the fire of the inward soul shining through the eyes and making the figure like animated radiance. That is great mastery. The rapture of an ideal.

A switchboard operator, imbued with the spirit of service, loving her work, thrilled with the pride of accomplishment, is beautiful to see. She is keenly alert, answering each call in the order of its appearance, watching her supervision, answering her recalls promptly, knowing that a customer is waiting to place another order, or that he may wish to receive a progress report; testing her line carefully when she receives a call to be sure it is not busy or that she will not interrupt conversation by partly inserting the plug into the jack; tracing her cords with the hand, rather than with the eye, to be sure she does not take down the wrong one, which may result in disconnecting someone in the midst of his conversation; teaming in and helping an adjacent operator when there is a flurry of traffic on her position; answering her customers cheerfully, with that pleasing and interested tone of voice the customer loves to hear.

Yes indeed, when a switchboard operator is imbued with the spirit of service, she does a beautiful job and she is beautiful to see. Like Jenny Lind, she may be undistinguished in appearance until she takes her place at the switchboard. Then she, too, is transfigured because her pleasing personality is reflected in her voice and manner, her patience in coping with trying situations, her spirit of helpfulness when a customer is experiencing difficulty on his call, her tactful explanations, her tone of regret when a desired line is busy. Her eyes sparkle as she handles call after call, efficiently, speedily and with the utmost courtesy.

Every operator can, and she should be, the kind of person Jenny Lind was when she rose to sing. Jenny was transfigured because she loved to sing. She enjoyed what she was doing. She put everything she had into her song and because of this, she held her audience spellbound. To them she was not just a plain girl singing a song, she was a beautiful person, a radiant person, and they loved her.

Customers cannot see the operator who answers them and who handles their call but, if her voice is pleasing, if she handles their call promptly and efficiently, they picture her as a beautiful person—and truly she is. There is an old saying, "Pretty is as Pretty does." That saying is just as true today as it was years ago.

If you have ever been discouraged because the operators working beside you seem to be more glamorous, why not do something about it? Your features may not be as perfect nor your figure quite as trim, but you, too, can be beautiful and admired, not only by the customers you serve, but by the people you work with and contact in your personal life: if you will develop personal charm and radiance.

Not long ago I addressed a state telephone convention. At the conclusion, a young lady approached me and said, "I wish I could be the kind of chief operator you spoke about." I assured her she could be if she had the will to be and the perseverance to follow through.

How often we see fine-looking men married to women who, upon our first meeting, seem to be unattractive and yet as we learn to know them, they grow upon us and, instead of saying, "What did he ever see in *her?*" we say, "Isn't she charming!" Beauty is not of face and figure alone. It is made of the soul, too, and this is a beauty which lasts long after physical attraction has deteriorated. So let's be beautiful today, tomorrow, and always. We shall be happier, more contented, and best of all, we shall make others happy, too.

Traffic Questions

(1) What action should be taken by the operator when a customer cancels an "A" board toll call?

(2) When a customer cancels an "A" board toll call and the operator does not have a ticket on the call, how should the operator proceed?

(3) Should a charge be made on an "A" board toll call affected by a double connection?

(4) On an "A" board toll call, if the chief operator refers a call to the supervisor to be completed to a non-published number, what instructions should be given to the operator in completing the call?

(5) What items should be entered on the ticket on an "A" board toll call to a non-published telephone?

Answers are presented on page 40.

How to take the mystery out of toll-call bills . . . with the

MICRO-TWIN microfilm RECORDER-READER

Every telephone man knows what the mystery is—the cryptic notations (12/6 Tdo .85) on toll bills that so many customers question.

Now, Burroughs has developed a way to simplify toll call billing. It will reduce expense for you by making it unnecessary to dig out toll tickets and explain them. Another saving will come from reduced posting time. And it will give the customer a complete description of every toll call he makes. Here's how it's done . . . with the Micro-Twin.

Instead of sending the customer an abbreviated statement of toll charges, do this: Send him the original, fully informative toll call tickets with a simple non-descriptive "facer" of items and total. This is possible with the Micro-Twin, because you can microfilm those slips, front and back simultaneously, to keep your records complete.

You'll have the same record you've always had, but occupying just *one per cent* of the former space. And you'll be enjoying the benefits of the lowest cost way yet found to eliminate time-wasting customer inquiries and money-wasting toll slip handling.

There are these bonuses, too, in the MICRO-TWIN!

When it isn't being used for toll-call billing, there are enough other jobs to keep the Micro-Twin busy making important savings —jobs such as permanently recording personnel data, service applications, easement agreements, and other papers you want to retain. Like the toll slips, they can be filed in one per cent of the space they now take.

You'll really need more complete information about the Micro-Twin and how it can improve customer relations, provide positive records, and cut filing time and space to almost nothing. Get in touch with your Burroughs branch, or write Burroughs Corporation, Detroit 32, Michigan.

Wherever there's business there's **Burroughs**

Burroughs B

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They're bringing you a Better Tomorrow!

Automatic's large, well-equipped research staff is constantly searching for the new, the improved, the better way. To you, their work is bringing more advanced equipment, ultra-modern service, increasingly profitable operation—a better tomorrow.

They have great plans for you, these men!

They're the key men of Automatic's extensive research staff. Each is an authority in his field—this one on automatic toll ticketing, that one on switching systems, and that one in electronics. They are imaginative men—men with inquiring minds. They know that patient study of even remote possibilities may bring you maintenance-cutting improvements in automatic switching, transistor-equipped voice repeaters operating at 90% power savings, or telephone components so advanced that they will surpass today's most optimistic estimates.

These men are charged with maintaining Automatic's leadership in research. They're adding new achievements to Automatic's more than 60-year record of "firsts," among which are: the automatic exchange, the dial, the modern handset telephone, and automatic toll ticketing. They're also adding valuable new information to the great story of telephone know-how which has made Automatic respected throughout the world.

Keep your eye on Automatic's research men. They're bringing you a *better tomorrow!*

Left to right, C. F. Ffolliott, J. F. Harm, E. S. Peterson, R. J. Maguire, L. F. Crabtree, J. E. Ostline, F. E. Wood, O. D. Grandstaff, I. Molnar, R. C. Stiles, and R. P. Dimmer.

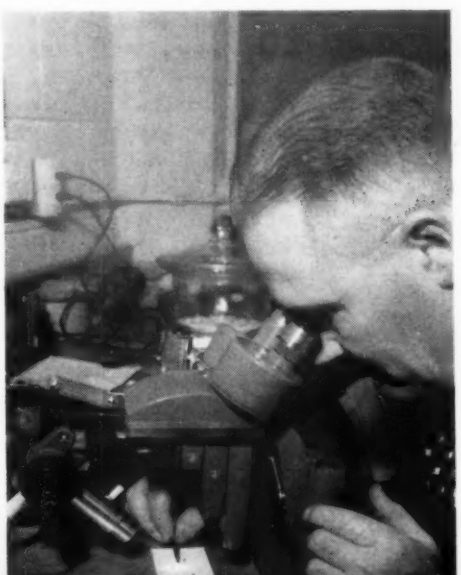
"It makes a more economical mounting for this toll ticketing detector."

"A design revision here will give this rotary switch greater bank capacity."

"This will show us how to get smoother switch operation."

"Let's see if Compound 12 has better insulation resistance."

"With transistors, the aim is surer processing—and a surer product."



AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus • Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

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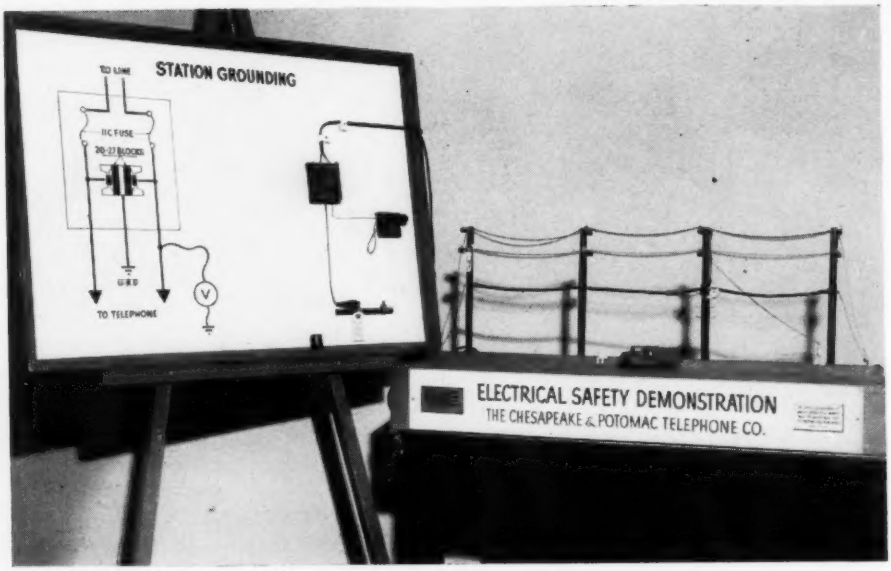


Fig. 1

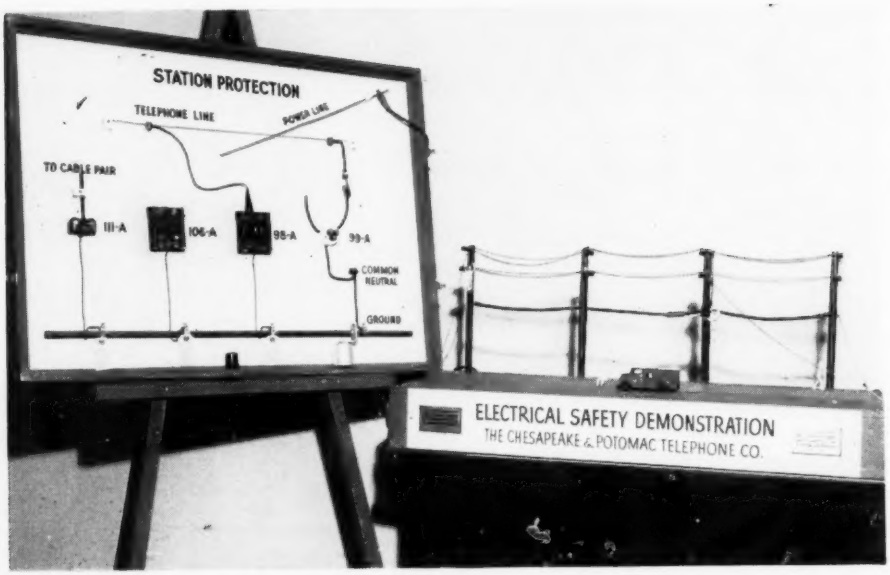


Fig. 2

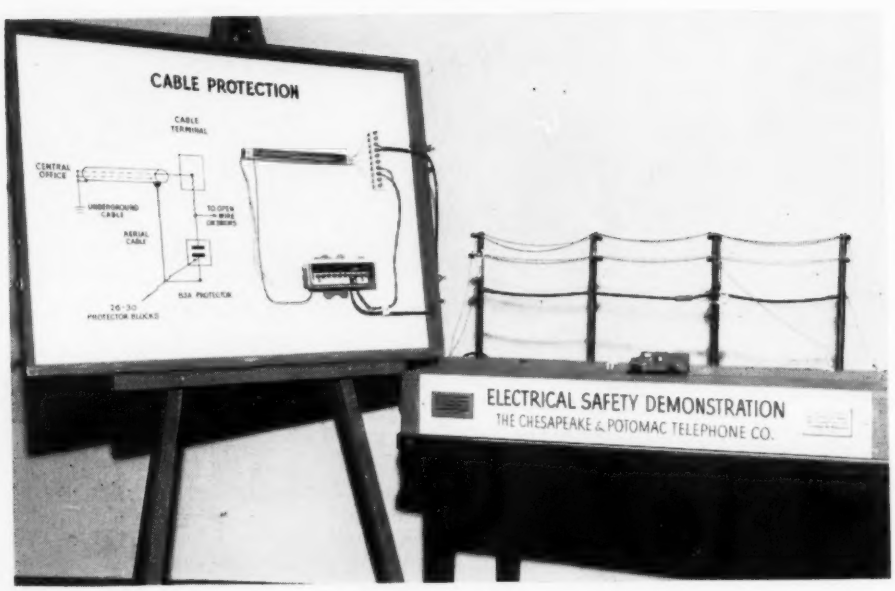


Fig. 3

Exhibits Show How to Make Telephone Jobs Safe

One of the contributions to the joint convention program of Virginia and West Virginia Independent Telephone Associations in Roanoke, Va., on Oct. 28 and 29, was an electrical safety demonstration presented by a representative from the Chesapeake & Potomac Telephone Co., a Bell System company operating in Washington, D. C.

The exhibit developed by the Plant Safety Staff of the C&P company, is used to demonstrate the electrical safety aspects of the job confronting telephone workmen, particularly those working on outside plant. The demonstration utilizes display panels showing the operation of various types of station and line protector devices and a model of a jointly occupied power and telephone line.

The demonstration has been kept simple and free from technical explanations. It attempts to show the reasons behind attention to building standard plant, planning the job, protective devices and to stimulate interest in doing things the right way. The entire demonstration lasts about an hour and audience participation is encouraged.

Two of the panels *(Figs. 1 and 2)* show station and line protectors and demonstrate their operation in the event of a power contact or lightning discharge. The accompanying lecture stresses the importance of proper installation and maintenance practices so that adequate protection against electric shock is afforded employees and subscribers, and plant is protected against damage due to electric contacts.

Another panel *(Fig. 3)* shows the proper use of protectors to eliminate or neutralize the effect of lightning discharges in cables thus reducing the hazards to employees.

One panel *(Fig. 4)* demonstrates and explains the theory and shows the effects of grounding guys and aerial plant in areas where poles are shared with power companies using a multi-grounded neutral system. The discussion brings out recognition of high tension power plant and emphasizes proper clearances and inductive coordination between wire-using utilities sharing poles.

The model joint-use pole line *(Fig. 5)* is used to re-enact various accidents and potential accidents and to demonstrate the causes for the mishaps and how they could have been avoided. Accidents and potential accidents caused by flip-ups, inadequate clearances, slack guys, energized street light brackets, etc., are shown. In addition, the phe-

nomenon "power arc follow up" is demonstrated and explained.

Proper planning, recognition of hazards and attention to the job at hand are emphasized in associated talks; "increased safety through increased knowledge" being the theme of the entire demonstration.

Armed with knowledge and trained in recognizing and correcting or avoiding hazardous situations, telephone workers should be able to perform their tasks in a safe manner. It is the hope and belief that exhibits and demonstrations of this type will aid in continuing to make the telephone industry a safe place to work.

No Job Is So Important and No Service Is So Urgent—That We Can Not Take Time to Perform Our Work Safely.

—Bell System

Fig. 4

Fig. 5

N. J. Bell Demonstrates Safe Vehicle Stopping Distances

A demonstration of safe stopping distances for various types of motor vehicles was conducted recently by drivers of the New Jersey Bell Telephone Co. Newark police blocked off the street during the one-hour demonstration.

Under the direction of K. F. Cochrane, staff supervisor, and W. A. Corbitt, safety supervisor, four vehicles were put through the test. They included a passenger car, a 1½-ton installation truck, a 4-ton splicing truck and a 10-ton line truck.

Drivers participating in the test brought the lighter vehicles to halt in distances less than the average 42 feet determined in tests by the National Safety Council. Cochrane said the totals also were lower than the company average of 34 feet which was established after several hundred tests of drivers for the telephone firm.

Tests showed the following results (expressed in feet):

	Reaction Time Distance	*Braking Distance*	*Total Stopping Distance*
Two-door passenger car	11	17	28
Installation truck	16	10	26
Four-ton splicing truck	23	21.5	44.5
Ten-ton line truck	20	20.5	40.5

Company testers used a detonator attachment to the front of the vehicle bumper to measure the reaction and stopping distances. Two blank cartridges, inserted in the tops of two miniature gun barrels, held ordinary chalk in the ends pointing toward the street.

The tester, riding with the driver, set off one cartridge at a point not known to the operator. The explosion forced the chalk onto the pavement, marking it. Simultaneously with the shot, the operator moved his foot to the brake pedal. The second shell was fired automatically by the jerk of the car.

The distance between the two chalk marks represents the reaction time. The distance from the last chalk mark to the front bumper determines the braking distance. Both added together measure the distance needed to stop a vehicle at a given speed. All the vehicles traveled at 20 m.p.h. for the tests.

XUM

THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

THE writer recently enjoyed a day's visit at the Federal Telecommunications Laboratories, a division of International Telephone & Telegraph Corp., in Nutley, N. J.

The engineers and scientists of this organization gave us most interesting explanations of the various developments and experiments in progress. New radio and microwave equipments proved especially interesting. We are confident now that the transistor will eventually prove its worth. Some of the new dial switching developments are no less than startling. Printed circuits are proving practical in telephone equipment. Here, also, we saw an automatic toll ticketing system of a new type in the process of development.

It always does a practical telephone man a lot of good to brush elbows with these men of science and get a small insight into better things to come.

• • •

Virginia and the Virginia Record, an independent publication founded in 1878 to tell the Virginia story devoted its October issue to Virginia's Independent telephone industry.

According to Charles P. Lamm, assistant division commercial manager of the Virginia Telephone & Telegraph Co., the first Virginia demonstration of the telephone took place at Staunton on Dec. 26, 1877, and the second at Charlottesville on Jan. 3, 1878. Credit for the first telephone company is given to Smithfield where the Smithfield Telephone Co. was established 68 years ago —Apr. 19, 1886.

• • •

George Hamburger, Washington, D. C., representative of the Copperweld Steel Co., informed us that he intended to give his two daughters a telephone line at Christmas for their personal use. This second line in the Hamburger residence is to carry both daughters' names in the directory listing. Not only will this arrangement please the daughters immensely but it will also permit the "old folks" to receive a call and use the telephone occasionally.

• • •

We note with much interest that a helicopter was recently used out at Santa Ana, Cal., to string telephone lines for a distance of 2 miles over rugged mountain terrain. This line was constructed to serve a hundred subscribers who had long waited for service.

We had thought that the ladder truck eventually would replace the lineman, but now it appears that the helicopter will win out.

• • •

There are at the present time more than 60,000 teletype machines in operation in the Bell System.

• • •

A survey was recently completed by the National Office Management Association on the communication practices in 2,406 companies in more than 100 cities of the United States and Canada that employ, in the aggregate, more than a half million persons.

It was found that 98 per cent of all companies reporting in this survey allowed incoming personal calls to be received by office employes—88 per cent anytime, 6 per cent only during off-time and 6 per cent only with special permission. Almost complete freedom is permitted in timing such calls.

Outgoing personal telephone calls by office employes are permitted by 96 per cent of the companies—77 per cent anytime; 12 per cent off-time and 11 per cent with permission. Paystations are provided for office employes in only 23 per cent of the reporting companies.

In our opinion, these figures may change drastically when extended area and customer toll dialing come into extensive use.

• • •

The New Jersey Bell Telephone Co. estimates that the nickels, dimes and quarters deposited in their public and semi-public telephones last year would weigh over 1200 tons. Gross receipts amounted to over 17½ million dollars. This amount, over 8 per cent of the total current billing for all services, was derived from approximately 43,500 coin telephones—or only slightly more than 3 per cent of total stations in service.

• • •

The *Pacific Telephone Magazine* recently described a novel method of moving pole lines on road widening projects as used successfully in the Northwestern district of Washington-Idaho.

This method makes use of a standard caterpillar tractor with a couple of items added. One special feature is a modified pole setting derrick from a retired line construction truck that is used on the tractor for pulling poles out of the ground. The second item is a stabilizing bar. This prevents twisting of the pole as the tractor transports it to the new location.

As a safety measure, adjustable guying ropes are strung from the top of the pole being moved to anchors at right angles with the line. When a pole has to be moved further than the normal slack in the wires or cable permit, the pole is moved the limit, set on top of the ground and the guys anchored. The next poles are moved in the same manner until there is enough slack to move the first pole further. This process is repeated until the entire section is shifted to the new location.

This pole moving method and the special equipment has proved its worth on two large jobs to date. One involved moving five miles of pole line with five crossarms of wire. Another involved five miles of toll cable, moved 60 feet to clear space for a new highway.

• • •

It has been said that time is capital which costs nothing to get, but everything to lose.

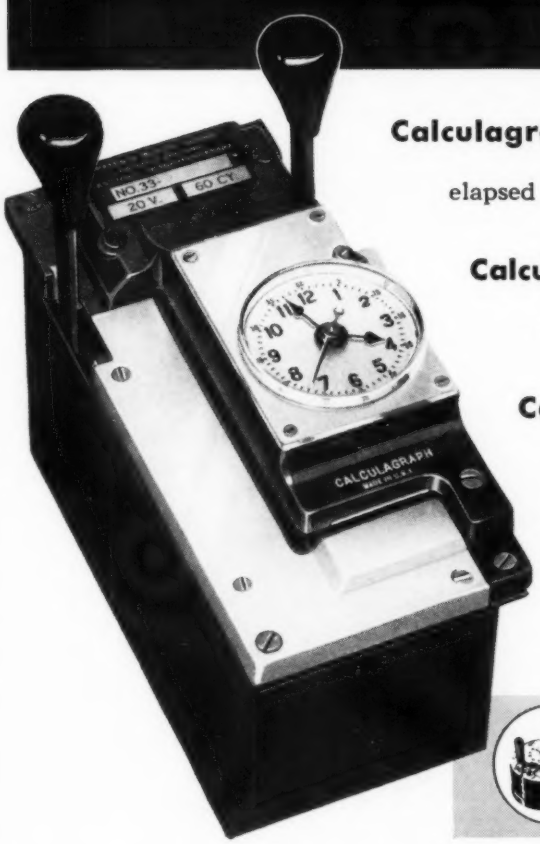
Spotlighting toll service—

CALCULAGRAPH

...speeds toll service

...protects toll revenues

Photo courtesy of
Kellogg Switchboard and Supply Company



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PLANT MAN'S QUIZ

by RAY BLAIN, Technical Editor

Q. What factors should be considered in making a determination as to whether the use of carrier systems will prove desirable in the telephone plant?

A. Carrier is rapidly becoming the primary method of supplying telephone circuits which are over relatively a few miles in length. A very large proportion of the circuits in the Bell System over about 100 miles long is now on carrier and practically all of the growth in circuits over about 25 miles long is obtained by means of carrier. The main reason why there are any voice frequency circuits left in service over 25 or 30 miles long is that carrier systems of types which are economical, down to these lengths have not been available a sufficient length of time to displace these voice circuits through growth.

Determination as to when carrier should be used, and the selection of the proper type of carrier system which will do the best and most economical job under particular local conditions, must involve consideration of a number of factors. These factors involve such things as costs of lines and repeaters, cost of terminals, number of circuits to be provided, flexibility, etc. Manufacturers of carrier equipment can give you a wealth of valuable information in this connection.

In addition to providing cheaper circuits in many cases, carrier provides circuits which are also superior to voice frequency circuits from the transmission standpoint. This is a very important factor in the operation of a complex telephone network because it not only improves transmission over the connections, but it also permits more economical operation by greatly reducing transmission limitations on the connections that can be established by connecting individual circuits together.

• • •

Q. Will you please describe the operation of a repeater switch as used in a dial telephone system?

A. This switch is generally used in trunk circuits which connect two exchanges. It is also used in cases where it is necessary to insulate the battery and ground of one exchange from another. It can also be used to repeat impulses, and in cases of trunks involving dial equipment, to eliminate the necessity of a third wire between exchanges. An example of the duties of a repeater can best be described by explaining the functions of an average inter-office repeater.

(1) Ground a release trunk to hold switches back of it.

(2) Repeat impulses to operate switches in distant office.

(3) Provide reverse battery to the calling party when the call is answered.

(4) Supply talking battery to the calling party.

(5) Prevent the battery of one exchange from contacting that of the distant exchange.

• • •

Q. What method of cleaning is recommended for spring contacts of relays on central office switching equipment?

A. One authority recommends the following tried and proved method. When ordinary dust is present, remove loose dust particles from relay contacts with a brush suitable for the purpose as, for instance, a clean dry tooth brush. This will probably be all of the cleaning that is necessary on the majority of the relay contacts.

When the contacts have become covered with accumulated grime, or with a gummy substance which is not readily removed by the dry brush method:

(1) Dip a clean tooth brush in chemically pure carbon tetrachloride, shake off excess liquid and brush contacts vigorously.

(2) Permit the spring assembly to dry for approximately five minutes.

(3) Brush the contacts with a clean dry tooth brush which has not been immersed in carbon tetrachloride.

Do not use wood, paper, chamois, or fiber strips for cleaning contacts as minute particles of foreign material will remain on the surface of the contact. If normal methods of cleaning do not prove adequate because of extreme local conditions, refer to the manufacturer of your particular equipment for special instructions.

Q. What is the most common cause of noise on open wire circuits?

A. The causes of noise on open wire plant are so numerous and varied that it would be most difficult to determine what could be considered the most common. The use of a proper transposition system to eliminate the noise caused by induction between circuits and between telephone and power lines is most important. Transposition systems must be planned and not used haphazardly if noise induction is to be reduced to a minimum.

Tree grounds are also a common cause of noise trouble. The only remedy is to set up rigid trimming and brush control by the chemical spraying method to maintain proper clearance. In locations where permission cannot be obtained from property owners to trim trees, either cable, tree wire or suitable guards that are insulated must be used.

High resistance joints are also a common and frequent cause of noise in open wire lines. Many old lines may contain twisted sleeve or Western Union type splices that are corroded, highly resistant and noisy. These should all be immediately replaced with compression type splicing sleeves. High resistance at splices frequently causes an unbalance of the line, which is always detrimental to transmission. Loose connections on jumper wires and cable terminals also cause their share of trouble. Make certain, also, that all insulators are in good condition. A cracked insulator may be the cause of a leak to ground and noise in wet weather. A line is never any better than its wet weather transmission.

• • •

Q. Cable splicing has always been a most difficult task for small operating companies. Is there any prospect in sight for this task being made easier in the future by using new techniques and plastic-insulated and jacketed cable?

A. We are firmly convinced that in the very near future any lineman with only average ability will be able to make satisfactory splices in plastic cable. In fact, we learned only recently of an experiment carried out in Texas in which a man with only seven days experience made acceptable splices in plastic cable by using new methods which avoided the use of paraffin, solder, and the twisting together of wires. Present-day plastic cables, compression type sleeves and a clamped-on closure make the art of cable splicing less specialized and mysterious.

There is every indication that these techniques may be made even more simple in the future.

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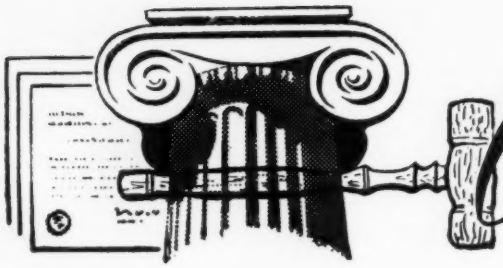

Courts and Commissions

Oklahoma Commission Authorizes Three Purchases

The Oklahoma Corporation Commission recently authorized Southwestern Bell Telephone Co. to buy the following 11 exchanges from General Telephone Co. of the Southwest: Billings, Marland, Morrison, Red Rock, Glencoe, Perkins, Ripley, Yale, Coyle, Mulhall and Carney (TELEPHONY, Aug. 14, p. 41); also inter-exchange telephone circuits between Red Rock and Marland, and between Coyle and Langston. The company was permitted to eliminate toll-free service between Red Rock and Marland and between Coyle and Langston, respectively.

In another order, the commission granted Southwestern Bell permission to purchase the Mustang Telephone Co. (TELEPHONY, Nov. 27, p. 31).

The commission also recently authorized S. E. Rowson and Lois Rowson to sell the Elgin Telephone Co. to Carroll and Luella Cook.

V V

North Dakota Company Files Articles of Incorporation

The South Drake Telephone Co., Drake, filed articles of incorporation with the N. D. secretary of state recently.

The non-profit South Drake company was organized to build 22 miles of line in McHenry and Sheridan counties.

O. E. Kemper, Sr., Drake, is president; Ben Blumhagen, Anamoose, is vice president and Ben Hauff, Anamoose, is secretary-treasurer.

V V

N. Y. Commission Authorizes Rate Increase for Rochester

The New York Public Service Commission on Dec. 28 authorized Rochester Telephone Corp. to increase rates by approximately $800,000 annually on Jan. 1, 1955. Present rates have been in effect since 1952. Rochester Telephone Corp. serves about 222,000 stations.

In seeking permission to increase rates, the company said its labor costs rose by about $382,000 in 1953 and by about $291,000 more in 1954. It also reported other increases in operating expenses, which, together with a constant demand for additional service and a requirement for further plant conversion to automatic operation, make it imperative that more revenues be procured. The difference between the aggregate amount of the rate increase authorized and the amount of actual increase in operating expenses will be absorbed by taxes.

In an opinion, based on testimony at two public hearings, Commissioner Glen R. Bedenkapp stated that: "In 1952, the last time the company was before the commission for a rate increase, the commission outlined a program which was a forward step toward the solution of the problem of better telephone service in the Rochester area. Since that time, important strides have been taken by the company and millions of dollars have been invested in the installation of modern automatic equipment. The sole question presented in this proceeding is—are additional revenues necessary to provide a fair return on invested capital and to enable the company to continue its improvement program?"

Testimony showed the company's plant investment to have increased by almost 9 million dollars between Dec. 31, 1951, and Aug. 31 of this year, Commissioner Bedenkapp stated. He concluded:

"During the three years intervening since its last rate proceeding, the Rochester Telephone Corp. has made healthy strides toward the complete regeneration of its plant and facilities. For the City of Rochester, that program is half completed and the coming year will progress it well along toward the two-thirds mark.

"In achieving its present improved status, the uphill climb has been marked by the recent diligent efforts of company's management and personnel, but particularly by the patience of the general public and an unusual complement of understanding on the part of its customers. Few welcome a relatively high level of rates and the many may be pardoned for grumbling when such status is combined with less than superior service.

"Part of the hoped-for improvement has already been materialized. It would be little less than tragic at this critical juncture in the forward progress, if the company were denied the means to attract, on reasonable terms, the large volume of additional capital it requires for the fulfillment of its ambitious program. It needs more equity capital, considering its present high debt ratio, to achieve a better balanced capital structure and secure needed funds for complete conversion to dial service. It cannot do so with its present operating revenue. Taxes alone will absorb more than 50 per cent of the proposed increase.

"Diligent efforts and a bit more patience will finally achieve for Rochester and its surrounding communities the high quality of telephone facilities and service to which they should be entitled."

V V

Nebraska Independent Secures New Rate Schedule

Further information received by TELEPHONY on the general rate increases granted in part to the Chapman Telephone Association by the Nebraska Railway Commission (TELEPHONY, Jan. 1, 1955, p. 37), includes the following net monthly former and approved rates:

	Old	*Approved*
One-party business [Metallic (M)]	$2.25	$5.00
One-party business [Grounded (G)]	2.25	2.25
Two-party business (M & G)	1.50	Eliminate
One-party residence (M)	2.25	3.00
One-party residence (G)	2.25	2.25
Two-party residence (M & G)	1.50	Eliminate
Four-party residence (M)	2.25	2.50
Rural (M)	2.25	2.60
Rural (G)	2.25	2.25

The commission did not allow all of the increase because it was determined that a portion of the items shown in the application as operating expenses should have been classified as capital expenditures.

Total operating revenue under the new rates is estimated to be $11,639; expenses, $8,873, exclusive of taxes estimated at $1,165. This will result in a rate of return of 6.23 per cent upon an adjusted net book rate base of $25,692, which includes an allowance for cash working capital, materials and supplies.

The company found it necessary to request an increase in taxes because it had hired a full-time lineman and had experienced an increase in commercial

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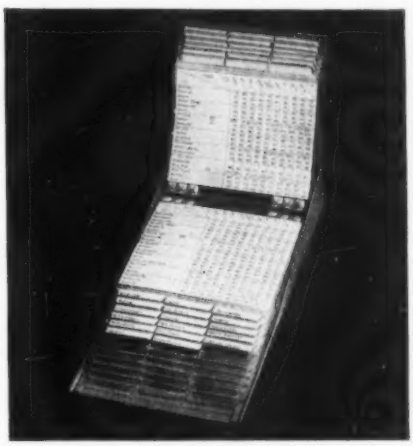
A similar directory, the Speedac Chaindex Reference Unit, Model 9940.2 has been developed for use at PBX switchboards. This unit can hold 1040



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expense. An increase in taxes is also anticipated.

The company serves 265 subscribers at Chapman and Archer with metallic type service over both metallic and grounded lines. However, in its application the company stated that all rural lines were to be metallicized by Jan. 1, 1955.

V V

Nebraska Commission Authorizes Rate Increase for Independent

The Nebraska Railway Commission authorized a general rate increase Dec. 14 for the Scotia Independent Telephone Co. (TELEPHONY, Jan. 1, 1955, p. 37).

The following increases for magneto service were approved:

	Old	*New*
One-party business	$4.75	$5.25
Two-party business	3.50	4.25
One-party residence	3.25	3.50
Two-party residence	2.75	3.00
Four-party residence	2.50	No Change
Rural	3.00	3.25

These rates are on a gross basis. Town subscribers billed quarterly receive 25 cents discount per month if the bill is paid during the first month of the current quarter. Rural subscribers are billed semi-annually and receive 25 cents discounts per month if the bill is paid during the first month of the six-month period.

Total annual revenue under the new rates is estimated to be $11,835; expenses, $7,264 exclusive of taxes estimated at $1,673. This will result in a rate of return of 5.3 per cent on an adjusted net book rate base of $54,708. The rate base includes an allowance for cash working capital, materials and supplies.

The company serves 272 customers at Scotia and the rural areas nearby. It has no switching subscribers. It operates under an authorized maximum capitalization of $50,000.

V V

Asks OK to Sell in Kansas

The Kansas Corporation Commission on Dec. 31, 1954, was to have held a hearing on the application of the Erdman Telephone Co., Arcadia, serving 229 subscribers, to sell its properties to V. L. Higginbotham, who owns two other exchanges in the area.

V V

Applies to Abandon Line

The Wisconsin Public Service Commission on Jan. 5 was to have heard the application of the Iron River Water, Light & Telephone Co. for authority to abandon a telephone line in the towns of Barnes and Hughes.

Georgia Independent Asks Authority to Borrow

Alabama Public Service Commission was to have held a hearing on Dec. 21 on a petition from United Telephone & Telegraph Co., Dothan, for authority to borrow $100,000.

The company is also asking for authority to let its stockholders pledge their stock as security for the loan.

V V

New Co-op Seeks to Buy Seven Central Kansas Exchanges

A proposed REA telephone cooperative has applied to the Kansas Corporation Commission for permission to buy seven central Kansas exchanges and convert them to automatic service.

The application was filed by Golden Belt Telephone Association, Inc., Timken. The commission has set the hearing for Jan. 24.

Exchanges at Timken, Rozel, Rush Center, McCracken, Nekoma, Alexander and Albert—owned by six private companies—are involved in the proposal.

V V

Indiana Commission Authorizes Three Rate Increases

Three Indiana Independents, which were authorized to increase rates recently, are the United Telephone Co. of Indiana, Warsaw; Rochester Telephone Co., and Sweetser Rural Telephone Co.

The increase authorized by the Indiana Public Service Commission for the United company amounts to $415,252, affects all but one of the 74 cities and towns the company serves (TELEPHONY, July 24, 1954, p. 35). The rate increase was suspended for the exchange at Mexico, pending improvements in service there.

United had asked that it be given a "fair and reasonable" return upon its properties, valued at 11 million dollars.

The figures cited at a hearing disclosed that the annual return now is $462,672 and that an additional $197,328 would be required to provide a 6 per cent return.

However, in order to provide the company with that additional $197,328, a gross annual increase of $415,252 is required because of taxes and other deductions.

United promised to convert all magneto stations to either common battery or automatic operation within the next three years.

The company was given a month to file flat schedules which will return the

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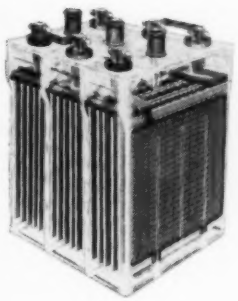

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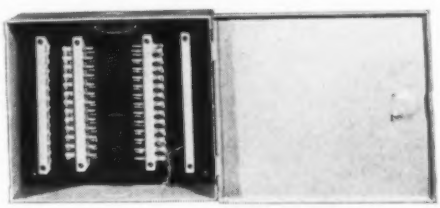

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gross total authorized by the commission.

The Rochester Telephone Co. was given authority to increase rates $34,217 annually.

The Sweetser Rural Telephone Co., with 571 customers, was granted the right to raise one-party business rates to $7.00 and one-party residence rates to $4.50. How much new rates will increase revenue was not determined immediately.

V V

Kansas Company Gets Rate OK For More Than 60 Exchanges

United Telephone Co. of Kansas, Inc., with headquarters at Abilene, Kans., and Kansas City, Mo., was granted a $173,945 annual rate increase Dec. 29, by the Kansas Corporation Commission (TELEPHONY, Oct. 30, p. 35).

The company serves 35,648 customers from more than 60 exchanges scattered throughout the state.

It had requested an annual increase of $201,876.

The new rates will become effective 30 days after receipt of the commission order.

The higher charge, however, will not apply at Russell until a new automatic system is installed and at Osawatomie until increased switchboard capacity is provided, said Commission Chairman Jeff Robertson.

* * *

It was reported that the commission also approved a $2,820 annual rate increase for the Tipton Telephone Co. The company which serves 220 customers, had asked for $3,085.

V V

Carolina T&T Ordered to Sell Stock at $125 a Share

The North Carolina Utilities Commission in an order Dec. 29 told the Carolina Telephone & Telegraph Co., Tarboro that it could issue the 66,640 shares of additional stock it wants to issue but at a price of not less than $125 a share, instead of the $100 par value proposed by the company (TELEPHONY, Aug. 28, p. 34).

The price put on the stock in the new order is $10 a share more than the $115 set by the commission in 1953, which the company appealed to the North Carolina Supreme Court on the contention that the commission had no authority to set stock prices higher than par value. The court later sent the case back to the commission telling it to make "specific findings of fact" why it was fixing a minimum price on the stock.

In its order, written by Commissioner Sam O. Worthington, who two days later stepped down as a member of the body, the commission declared that "the proposal to market these 66,640 shares . . . at par of $100 represents an underpricing below the current market value of between 30.55 and 31.74 per cent, depending upon whether the quotation of 144 existing at the date of the hearing or the quotation of 146.6 which now exists is used.

"We have determined that the earnings record and past history of this company clearly show that the issue of stock can be marketed at not less than $125 per share and marketing at such a price is compatible with the public interest."

The commission's order was based on a split decision (4 to 1), Commissioner Edward McMahan dissenting.

The company proposed to offer the new stock to its present stockholders at the rate of two new shares for each five shares now held, and the commission agreed to this arrangement but it said that the price must be $125 a share instead of $100. In so doing, the commission said that the company has sold some recent stock issues on the open market at "prices much in excess of par and for the most part between $130 and $140," and that "there is no reason to believe or fear the company will have any difficulty in selling" its stock at the $125 figure.

The company's stock pays $8.00 per share in dividends.

The commission pointed out that at $100 a share Carolina T&T stockholders would have realized a return of 8 per cent on their investment, instead of 6.4 per cent at $125 a share which it said is "considered fair and reasonable under present day market conditions."

It stated that at $125 a share the company "will receive $1,666,000 more in equity capital at no cost to the company, except such expense as may be incidental to the sale . . . and will thus enable the company to pay off all of its short-term notes outstanding . . . and have $951,000 for use in expansion of services."

The commission stated further that the company obviously could use the extra money since it has made frequent proposals for rate increases since World War II and is planning an expansion program. At the same time, it reminded the company that the rates it has been allowed to charge are "in a large measure responsible for the fact that the company is able to pay an $8.00 dividend."

Replying to a company contention that the pricing of the stock at more

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than par would weaken the market for the company's stock, the commission said it would be "logical" to assume that the new issue could be sold since the representative of one brokerage house who testified at the hearing said his firm would take the entire issue of 66,640 shares at $130 a share if it were given the chance.

"If this should result in new stockholders buying into the company, it would be a decided advantage for the company," the commission said. "It would strengthen the company's position in future stock sales."

In his dissenting opinion, Commissioner McMahan contended that the majority of the commission based their decisions on a false premise. He said:

"I deem it unwise and unwarranted at this date and in the absence of proof as to fair value for this commission to say the basic value of the property of the Carolina Telephone & Telegraph Co. is such that each share of its capital stock is worth not less than $125. But that is what the majority opinion appears to say.

"I deem it unwise and dangerous and unwarranted for this commission to assume and to base an opinion on that assumption, that the Carolina Telephone & Telegraph Co. has a 'fixed' dividend of not less than $8.00 and that the commission should fix rates reasonably calculated to produce for the company an amount of money sufficient to pay any fixed dividend and pass a reasonable amount to surplus.

"To state my conclusion very briefly, I think that the number of shares of common stock has nothing to do with either a fair return rate base, or the fair rate of return on that fair value rate base."

The case dates back to 1953 and the company in its original petition asked permission to issue only 33,320 shares. After the commission's original price of $115 was appealed, the supreme court did not rule on the company's contention that the commission had exceeded its authority but remanded the case with instructions that the commission state why it had set the price and why it considered its action to be in the public interest.

When the case came up for a rehearing before the commission, the company doubled its original request and asked permission to issue 66,640 shares.

In its second order the commission took the position that its authority to set stock prices is clearly defined in the North Carolina general statutes, and that the supreme court itself had suggested in an opinion in a Southern Bell Telephone & Telegraph Co. rate case (TELEPHONY, Feb. 6, p. 30), that stock prices should be considered.

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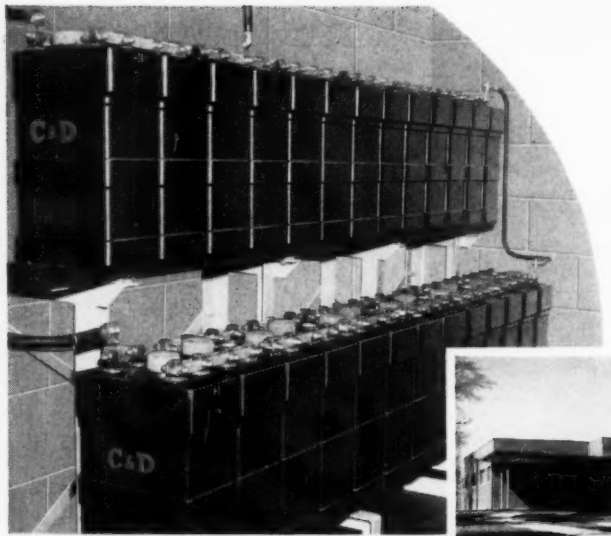

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SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

Minnesota Commission Approves Four Sales and Purchases

The Minnesota Railroad & Warehouse Commission on Dec. 27 authorized the Andrews Telephone Co. to purchase certain properties of the Rollag Telephone Co., Hawley, (then in receivership) in the townships of Hawley, Eglon, Skree, Parke, Tansem, Humboldt and Barnesville in Clay county, serving approximately 100 stations.

The commission also granted to the Rollag company permission to transfer to the Hawley Rural Telephone Co., certain properties located in Hawley, Cromwell, Keene, Eglon and Highland Grove townships, and serving approximately 55 stations.

In another action on Dec. 27, the commission authorized the Two Ten Telephone Co. to transfer its properties to the Crow Wing Cooperative Rural Telephone Co., Brainerd. The Two Ten Company owns a telephone system in May township, Cass County, serving approximately 13 stations.

On Dec. 29, the commission extended

Answers to Questions On Page 24

(1) The operator should acknowledge the request and cancel and file the ticket.

(2) If the operator does not have a ticket on the call, she should obtain such identifying details as she thinks are necessary, prepare a memorandum, and notify her supervisor.

(3) No charge should be made for a call affected by a double connection unless the call is completed satisfactorily following the double connection.

(4) After securing the non-published number, the supervisor should instruct the operator to establish connection on a split cord basis. The non-published number *must not* be given to the calling party.

(5) The following items should be entered on the ticket:

(a) The calling number in the "From" space.

(b) In the "To" space, enter the name of the office in which the non-published telephone is located followed by "Non-Pub," as for example, "Euc 6 Non-Pub."

(c) The non-published number in the "Other" space.

(d) Timing entries the same as on a regular "A" board toll charge ticket.

You don't have to be a Monkey—

. . . to loosen frozen bolts on utility poles. The new Aerosol Kroil, which can be squirted with one finger, loosens the most stubborn frozen metal parts . . . FAST. More than 12,000 shops depend on Kroil whenever frozen metal parts threaten to tie up production or waste manhours. In this new package it is the finest rust-busting tool ever . . . shoots a stream 3 ft. yet won't leak. One customer said, "before trying Kroil we broke off every nut (on our heat treat trolleys), since then we have not lost one and have decreased the repairing time from 30 minutes to about 6 minutes per trolley."

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Use Kroil on all dismantling jobs; for filing, sawing, honing; . . . also keeps air driven tools running freely.

Just try Kroil on a make good basis. Case of 12 Aerosol Kroil 12 ounce cans $21.60 f.o.b. factory or send $2.35 for one can postpaid. If it doesn't perform to suit you, return the empty can for refund.

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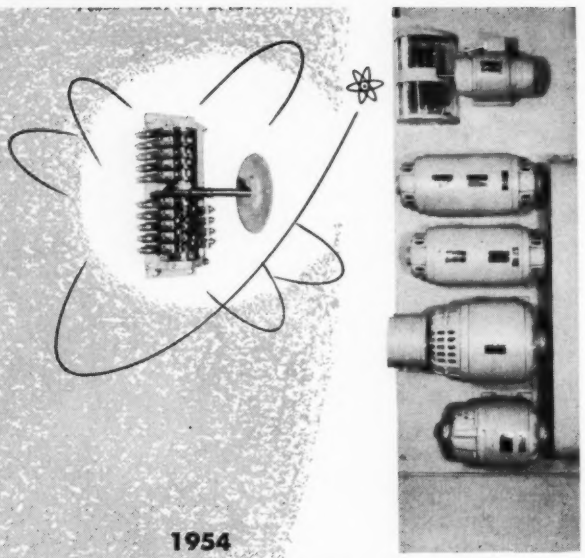

1954

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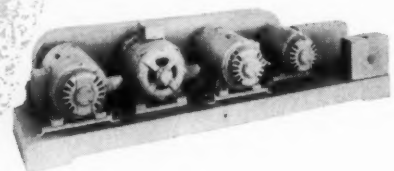
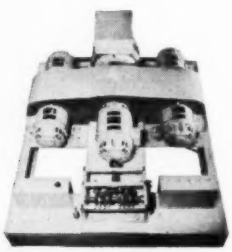


1951

Clarinda, Iowa. Simplified hook-up



1949

Oxnard, California.
Improved interrupter design

1947

Rochester, New York. A new, better motor generator set

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Specify ESCO when ordering ringing equipment.

permission to the Chokio Telephone Co. to sell its entire telephone properties to the Federated Telephone Cooperative.

V V

Ark. Commission OKs Reduced Increase for General of the SW

General Telephone Co. of the Southwest's request for a $302,000 general rate increase has been whittled to $35,240 by the Arkansas Public Service Commission (TELEPHONY, May 29, p. 36).

The commission ordered the company to make up the deficiency by increasing charges for private branch exchanges, miscellaneous services and by increasing the cost of a pay station call from five to 10 cents.

General Telephone filed the application for the increase on April 15, 1954, and asked for a 7.4 per cent rate of return on its investment, it was reported.

The company, which has headquarters at San Angelo, Tex., operates Arkansas exchanges at Augusta, Blevins, Cotton Plant, Marvell, McCrory, Prescott, Taylor, Texarkana, Waldo, Waterloo and Wheatley.

V V

North Carolina Independent Asks Authority for Rate Raise

The Concord Telephone Co., asked the North Carolina Utilities Commission on Dec. 31 for authority to increase its rates $220,000 annually.

The company which serves Cabarrus and part of Rowan counties, was given a hearing postponement on an earlier request for a $121,965 rate increase, filed Aug. 31, 1953, so that it could revise its figures on construction costs, and now says it would need additional money for new central exchanges at Concord and in the Landis-China Grove area.

The company reported that it needs an increase of $220,000 to raise its net revenue to $98,000 annually, and placed the value of its property in the Concord, Kannapolis and Mount Pleasant areas at $3,425,254. The added net revenue is necessary, the company states, to offset rising costs and to provide a rate of return adequate to attract capital for its expansion program. It was left up to the commission to set the rates necessary to produce the $220,000 before taxes.

Concord and Kannapolis residence subscribers now pay $4.50 for one-party service, $3.75 for two-party, $2.25 for four-party and $2.50 for rural, multi-party. Business rates are $7.50, $6.50, $4.25 and $4.50.

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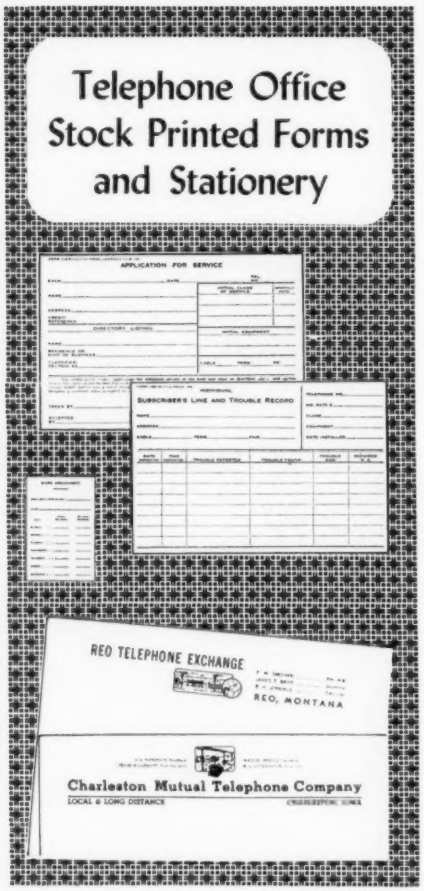

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are $5.50, $5.00, $3.50, and $3.75 for business; and $4.00, $3.25, $2.00 and $2.25 for residence service.

Mount Pleasant rates are $6.00, $5.50, $3.75 and $4.00 for business; and $4.00, $3.25, $2.00 and $2.25 for residence service.

A NEW CONCEPT IN OPEN WIRE PLANT

Continued from page 20

between pairs would provide better carrier frequency cross-talk characteristics economically.

(11) Wet weather attenuation would approximate dry weather values at carrier frequencies, simplifying carrier equipment design and extending circuit lengths.

(12) Carrier frequency attenuation would be less affected by ice on the wires, increasing circuit reliability.

(13) Method of conductor support is simple and non-critical, and would require little skill to install.

(14) Method of support could be easily adapted for construction from the ground.

(15) Conductors could be coded for tip and ring identification if desired.

(16) Conductors would be protected from corrosion, thereby, increasing life expectancy.

(17) Carrier frequency conductivity of plated steel conductors would be retained over the life of the wires.

(18) Advantages in open wire construction and maintenance that would result do not create problems of compatibility with other items of plant.

Some of the disadvantages of the method are:

(1) Higher cost of conductors because of insulation requirements.

(2) Increase in the diameter of the insulated conductors may increase storm loading somewhat. (Diameter of ice would be increased 4 to 5 per cent with 22 mils insulation on .109 inch conductors.)

(3) More care would be required in wire stringing than for bare wire to avoid abrasion of insulation.

(4) If increased sag were used in construction and were permitted after storm loads, increased pole height may be required to preserve ground clearances.

(5) If conditions resulted in sag inequality of such magnitude as to have wrap arounds or continuous hits, abrasion of the insulation may be a problem.

There are large potential advantages in construction cost, service reliability and maintenance cost resulting from the proposed design which uses two insulated wires in open wire construction. The known disadvantages appear few in comparison to the advantages. Further evaluation of its practicability requires field trials and laboratory tests. The development of new fittings and modification in certain existing materials will be required for employment of the design. It is probable that further study will bring to light more advantages and suggest more radical departures from conventional methods, as well as new problems. In any event, the design appears to have sufficient merit to be well worth further exploration. Cooperative efforts on the part of the manufacturing and operating segments of the communications industry will be needed in this effort.

Several field trials of one wire insulated construction are being made with conventional design of spacings and fittings. These will afford valuable data on construction problems that apply to insulated wires. Additional trials of two wires insulated with new spacings and fittings would be a logical next step to obtain further construction and operational experience.

V V

Seeks to Issue Mortgage Note

On Dec. 30, the Purdy Telephone Co. filed with the Missouri Public Service Commission, a request for authority to issue its mortgage note in the sum of $70,000.

Type S-1-A
Frequency Modulated
Subscriber Carrier

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Results: We will have a most complete "How to Install Book" based on our own actual experience.

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IN THE NATION'S CAPITAL

Concluded from page 23

sal to go all the way with the commission's use of a hypothetical debt-to-equity ratio in order to justify a lower return. Mountain States, it appears, has a ratio of bonded debt to equity stock amounting, roughly, to 30-70. The commission thought this debt structure was too low and estimated its return requirements on a hypothetical debt-to-equity ratio of 45 to 55. The court thought this was too much of a debt assumption and ruled that return requirements should be based on a debt-to-equity ratio no higher than 40-60.

In addition to finding that the commission's allowances for working capital and plant under construction were "inadequate," the Idaho court criticized the commission for trying to second guess the company's management on when to buy more plant, in view of prevailing price levels. Specifically, the court ruled down the commission's claim that Mountain States made unjustified expansions in times of high prices and thus placed an unfair burden on the old subscribers.

"How long must appellant wait for prices to level off or go down?" it asked. "How long must new areas wait for service before they will be considered justifiable risks?"

V V

Pacific T&T Installer Gets Vail Award for First Aid

Emerson J. Mitchell of Santa Monica, Cal., an installer for Pacific Telephone & Telegraph Co., on Dec. 8 was named to receive a Vail medal, the industry's highest award for public service.

Mr. Mitchell was credited with saving a man's life. Last Mar. 10 while he was installing a telephone in a customer's home, the housewife ran in screaming that her husband was trying to kill himself. Mr. Mitchell persuaded the man to unlock the bathroom door and found him bleeding from severe stab wounds. Instructing the wife to call the police and ambulance, the telephone man ran to his truck for a first-aid kit. Using every bandage in the kit, he stopped the bleeding, which otherwise would have been fatal.

Mr. Mitchell earlier had been awarded a bronze medal, but subsequent review of his case resulted in bestowal of the higher recognition.

V V

A man, like a watch, is to be valued for his manner of going.—WILLIAM PENN.

OBITUARIES

CECIL C. DONLEY, 62, chief engineer of The Lincoln (Neb.) Telephone & Telegraph Co., died unexpectedly at his home in Lincoln on Dec. 26. He suffered from a heart ailment.

Mr. Donley was a veteran of the telephone industry, having spent nearly 46 years of his life with the Lincoln company. He started his career as a

C. C. DONLEY

lineman at Lincoln in 1909 and was later an installer, switchboardman and inspector. In 1920 he was appointed wire chief and two years later became traffic engineer. In 1937 he was advanced to assistant general traffic superintendent, and in 1944 became head of that department as general traffic superintendent. He was appointed chief engineer in April, 1948.

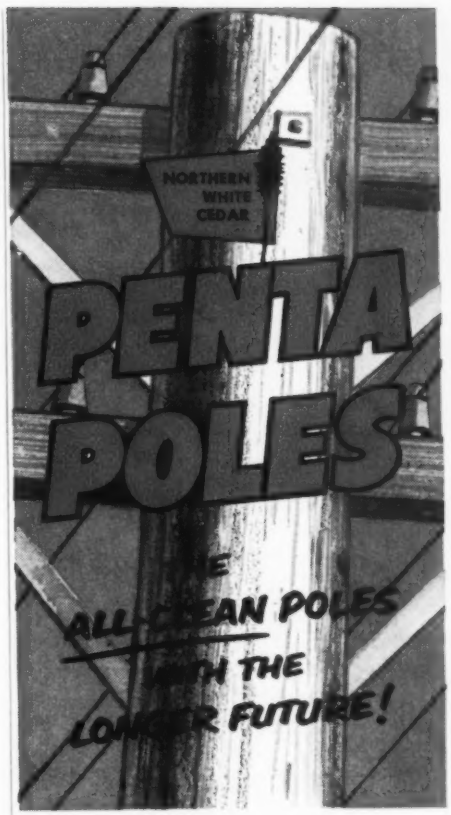
Widely known in the telephone industry, Mr. Donley was a member of the Sub-committee on Toll Dialing, Radio Service Committee, and a former chairman of the Traffic Committee of the United States Independent Telephone Association. He was a charter member of the Frank H. Woods Chapter of the Independent Telephone Pioneer Association.

He is survived by his wife, Oca; a son, Jack, of El Monte, Cal.; a brother, Claude, of Lincoln; and one grandchild.

* * *

GEORGE MUSSMAN, 61, owner of the Northwestern Indiana Telephone Co., Hebron, Ind., and a resident of Crete, Ill., died in Crete recently. His death was caused by diabetes.

Mr. Mussman became owner of the Northwestern Indiana Telephone Co. in 1943, purchasing it from the late Charles Summers. The Northwestern



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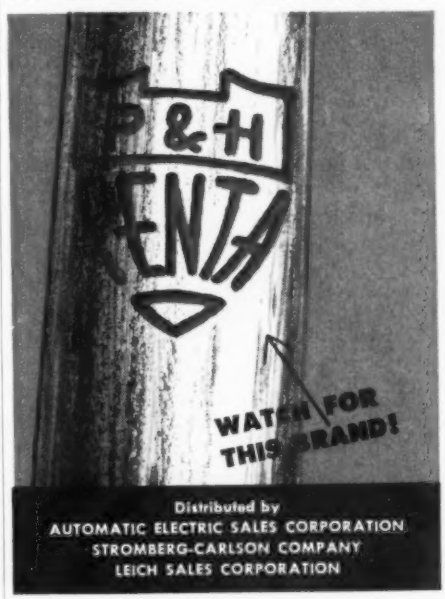

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Indiana company is managed by the deceased's son, Robert, of Chicago Heights, Ill.

Surviving are the widow and two sons, Gerald of Joliet, Ill., and Robert.

V V

North Carolina Independent Makes Change in Name

The Matthews and Waxhaw Telephone Co., which has just acquired all outstanding capital stock of the Anson Telephone & Telegraph Co., Wadesboro, N. C., is changing its name to North Carolina Telephone Co., it was announced on Dec. 24 by Linn D. Garibaldi of Charlotte, N. C., company president (TELEPHONY, Jan. 1, p. 34).

At the same time, Mr. Garibaldi announced the election of H. P. Taylor of Wadesboro, an officer of the Anson, as a director of the expanded company, which he will serve as general counsel along with B. Irvin Boyle of Charlotte.

Mr. Garibaldi said that the operations and corporate affairs of Western Carolina Telephone Co., Weaverville, N. C., which he also heads as president, are unaffected by the program involving the Waxhaw, Matthews and Anson corporate setup.

It was announced that the newly-formed North Carolina Telephone Co. will carry out a one-million-dollar improvement program during 1955 which will involve largely the conversion of the Wadesboro, Morven and Indian Trail exchanges to automatic operation.

V V

REA Head Studies Statement Of Telephone Advisory Group

REA Administrator Ancher Nelsen is studying a statement prepared by an advisory group cooperating with agency officials in improving the agency's rural telephone program.

The advisory group's statement was prepared following a meeting on Dec. 15 in Washington, where 18 representatives of various segments of the telephone industry met with top REA telephone officials. It was agreed by these consultants that small Independent telephone companies be encouraged to examine the REA program and consider use of its loan services in the event financing assistance is needed to improve and extend their service to farm families and other rural subscribers.

The committee also asked REA to give more publicity to recent changes in loan policy and procedures which permit the agency to more closely fit its loans to individual needs of borrowers. The text of the group's statement of recommendations to REA follows:

"In the interest of encouraging the continued improvement and expansion of telephone service in rural areas, and to assist this program generally, the committee recommends for consideration the following points:

"*Financing.* That all telephone companies, associations or groups encourage and assist in the expansion and improvement of telephone service to rural areas and that they consider REA financing where needed.

"*Partial System Financing.* That REA publicize its policy permitting an applicant to secure a loan for a part of its system if the area under consideration is economically feasible as a unit.

"*Cooperation To Expedite Program.* That, insofar as practicable, REA continue its efforts to obtain complete cooperation between the applicant for a loan, the connecting company, the engineer, contractor, suppliers, manufacturers, and state regulatory body in order to expedite the availability of adequate telephone service to rural areas.

"*Bidding.* That REA clarify and publicize its policy on competitive bidding for borrower's construction and for purchase and installation of central office equipment, so that applicants may understand fully what exceptions are permitted.

"*Equity.* That REA clarify and publicize the bases for equity requirements which it establishes for commercial borrowers as security for the REA loan.

"*Extended Area Service.* The committee finds that extended area service is still a problem to REA applicants and connecting companies in some instances, and for that reason recommends that all parties concerned get together early and on a cooperative basis for planning and engineering proper equipment. It is recommended, also, that at this time an equitable extended area service settlement agreement be negotiated. It is suggested that as a guide the report of the Extended Area Service Committee which was adopted by the United States Independent Telephone Association's board of directors be used.

"In addition to those aspects of the REA rural telephone loan program listed above, the committee also discussed: Availability and standards of engineering, ways of reducing cost of construction, methods for expediting loans, problems involved in obtaining approval by regulatory bodies, and a number of other related matters. No specific recommendations were agreed upon regarding these items."

Administrator Nelsen said he was turning over the specific recommendations of the committee to his REA telephone staff for study and action to the extent practicable.

"We know there are still problems in the telephone loan program, even though we are just completing REA's most successful calendar year," said Mr. Nelsen. "The difficulties touched on by the advisory group at their meeting and in their statement are the very

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ones which are of most concern to REA. We are gratified at this understanding of our trouble spots by these telephone men who have outstanding reputations in the industry. With their interest and the support of the organizations they represent, REA will be better able to meet the need of rural telephone systems for long-term financing in order to put more telephones on the farms of America."

The REA administrator announced that gross telephone loans for the year ending Dec. 31, 1954, would be about 65 million dollars, topping the 1953 calendar year by about 15 million dollars. He expressed concern, however, at a levelling off in loan applications and loan approvals at a rate less than that anticipated by REA.

V V

South Dakota Independent Sold To Cooperative Company

A deal was completed recently whereby the Canova (S. D.) telephone Exchange, owned by Verne Bunkowske, was sold to the McCook Cooperative Telephone Co., Salem, S. D.

Mr. Bunkowske has been retained as manager of the Canova exchange. The McCook cooperative plans to have a new automatic system installed in Canova by Aug. 1, 1955.

V V

Eastern District Keystone Pioneers Hold Dinner

The eastern district of the Keystone State chapter of the Independent Telephone Pioneer Association held a dinner meeting on Dec. 3 in Ephrata, Pa., at the American Legion home.

Mrs. Bertha Brossman Eaby, Ephrata, was the toastmaster. The invocation was given by John Martin, New Holland. Mrs. Lester Sharp, Ephrata, played the piano for the singing of Christmas carols. Nicky Herr, also of Ephrata, entertained on the accordion and Henry Ritchey of Pottstown, displayed feats of magic and ventriloquism.

Door prizes were awarded and favors given to all present. The room was beautifully decorated in keeping with the Christmas season.

Seventy persons were in attendance representing the following companies: Conestoga Telephone & Telegraph Co., Birdsboro; Columbia Telephone Co.; Denver & Ephrata Telephone & Telegraph Co., Ephrata; Enterprise Telephone Co., New Holland; Pennsylvania Community Telephone Co., Quarryville; York Telephone & Telegraph Co.; Reuben H. Donnelley Corp., Harrisburg; and Stromberg-Carlson Co., Rochester, N. Y.

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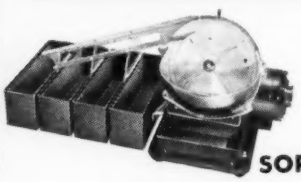

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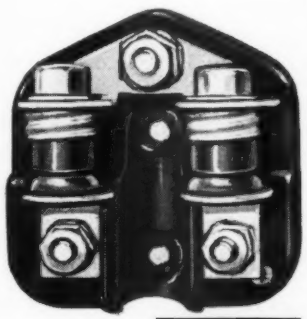
Index to ADVERTISERS

	Page
Abbott Coin Counter Co.	—
Acme Visible Records, Inc.	—
Acorn Insulated Wire Co., The	—
Alphaduct Wire & Cable Co.	—
American Appraisal Company, The	—
American Creosoting Co.	—
American Electrical Heater Mfg. Co.	—
American Steel & Wire Co.	—
American Telephone & Telegraph Co.	—
Ansonia Wire & Cable Co., The	9
Armstrong Cork Co., Glass Insulator	—
Atlantic Creosoting Co., The	49
Automatic Electric Sales Co.	26-27, 41
Baker Wood Preserving Co., The	—
Bartlett Tree Experts	—
Bashlin Company, W. M.	—
Bell Telephone Laboratories, Inc.	—
Berry & Co., L. M.	—
Bethlehem Steel Company	—
Biddle Co., James G.	—
Bjornson Construction Co.	47
Bishop Mfg. Co.	—
Boardman, Ltd.	—
Buckeye Telephone & Supply Co.	48
Burgess-Manning Co.	41
Burroughs Corp.	25
C&D Batteries, Inc.	40
Cabaniss-Pogue Company	47
Cable Breather Corp., Inc.	—
Cable Spinning Equipment Co.	—
Calculagraph Company	31
Carney & Co., B. J.	49
Cascade Pole Co.	49
Chance Co., A. B.	—
Chase Brass & Copper Co.	43
Christiansen Co., C. M.	49
Cleverly Electric Works, The	—
Coffing Hoist Co.	—
Communi-Catering	47
Commercial Cord & Supply Co., Inc.	—
Cook Electric Co.	—
Copperweld Steel Co.	—
Cullom & Ghertner	47
Davis Construction Co.	—
Design Service Company	—
Diamond Wire & Cable Co.	—
Dierks Forests, Inc.	49
Donnelley & Sons, R. R.	—
Dow Chemical Co., The	—
Duo Safety Ladder Corp.	—
Electric Storage Battery Co., The	—
Electric Specialty Co.	42
Eppinger & Russell Co.	49
Ericsson Corp., The	—
Everstick Anchor Co.	—
Fitchburg Engineering Corp.	—
Foley Constr. Corp., Robert E.	47
General Cable Corporation	—
General Electric Company	—
General Insulated Wire Works, Inc.	—
General Machine Products Co., Inc.	46
General Telephone Directory	52
Gladwin Plastics, Inc.	—
Gorman Rupp Company	—
Gould-National Batteries, Inc.	16
Graybar Electric Co.	12-13
Greenlee Tool Co.	—
Haley & Co., R. G.	—
Hams' Construction Co.	49
Harris-McBurney Company	49
Henkels & McCoy	47
Hill, Cyrus G.	47
Hirsch Organization, Inc., Gustav	43
Holan Corp., J. H.	—
Holtzer-Cabot Div.	—
Homelite Corp.	—
Hubbard & Co.	—
Indiana Steel & Wire Co.	—
Inet Division of Leach Corporation	—
International Creosoting & Construction Co.	49
International Harvester Co.	33
International Standard Electric Corp.	—
Irwin Auger Bit Co., The	—
Johns-Manville	—
Kano Laboratories	41
Katolight Corp.	—
Kearney Co., Jas. R.	38
Kellogg Switchboard & Supply Co.	4-7
Klein & Sons, Mathias	—
Klopp Engineering, Inc.	50
Koiled Kords, Inc.	—
Koppers Co., Inc.	—
Leich Sales Organization	10-11
Line Equipment Sales	—
Line Material Co.	—
Linen Thread Co., Inc., The	—
Loomis Advertising Co.	—
Lorain Products Corporation, The	—
Lowell Insulated Wire	—
Mahood, Edwin T.	—
Mastercraft Plastics Co., Inc.	48
McCabe-Power Auto Body Co.	—
McElroy Manufacturing Corp.	44
Morton Construction Co.	47
Murer & Smith	47
Murphy Engineering Laboratory	—
Natco Corporation	—
National Carbon Division	—
National Pole & Treating Div.	—
National Telephone Supply Co.	—
Neale Construction Co.	47
North Bros. Mfg. Co., Div. of the Stanley Works	—
North Electric Mfg. Co.	14-15
Onan & Sons, D. W.	—
Ostlund, Evert M.	47
Overton Company, S. E.	—
Owens-Illinois	—
Page & Hill, Inc.	45
Partridge Lumber Co., T. M.	49
Permacrete Products Corporation	—
Phelps Dodge Copper Products Corp.	—
Philco Corp.	—
Piedmont Wood Preserving Co.	49
Porcelain Products, Inc.	—
Power Equipment Co.	—
Preformed Line Products Co.	39
Premax Products	—
Prodelin Inc.	—
Raytheon Mfg. Co.	—
Rebuilt Electric Equipment	48
Recordak Corp.	—
Reliable Electric Co.	51
Remington Rand Inc.	35
Roanwell Corp.	—
Runzel Cord & Wire Co.	—
S & G Manufacturing Corp.	—
Schauer Mfg. Co.	—
Signal Engineering & Mfg. Co.	—
Sloan, Cooke & Lowe Co.	47
Seymour Smith & Son, Inc.	—
Soapstone Duct Co.	—
Stromberg-Carlson Co.	2-3, 36-37, 49
Superior Cable Corporation	—
Suttle Equipment Co.	47
Taylor-Colquitt Co., The	—
Telectric Co., The	48
Tel-E-Lect Products, Inc.	—
Telefon Fabrik Automatic	—
Telephone Answering & Recording Corp.	—
Telephone & Power Supply Co.	49
Tele-Systems, Inc.	—
Tele-Wire Supply Co., Inc.	—
Telkor, Inc.	—
Texas Creosoting Co.	49
Tudor and Yager, Inc.	47
United States Motor Corp.	—
United States Steel Corp. American Steel & Wire Co.	—
United States Steel Corp. Coal Chemical Div.	—
Utilities Contracting Co.	—
Utility Tool & Body Co., Inc.	—
Wavell Showcase & Fixture Inc.	—
Western Electric Co.	—
Weston Electric Instrument Corp.	—
Whitney Blake Co.	—
Williams Inspection Co., A. W.	47
Wilton Elect. & Telephone Constr. Co.	47
Wiremold Co., The	—



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